DOCUMENT RESUME

ED 158 019		CE 017 379

AUTHOR	Olmstead, Joseph A.; Elder, B. Leon
TITLE	The Use of Management Games for Developing Army Officers in Administrative and Staff Jobs. [Final Report.]
INSTITUTION	Human Resources Research Organization, Alexandria, Va.
SPONS AGENCY	Army Research Inst. for the Behavioral and Social Sciences, Arlington, Va.
REPORT NO	ARI-TR-78-A2
PUB DATE	Feb 78
CONTRACT	DAHC-19-76-C-0048
NOTE	175p.
EDRS PRICE	MF-$0.83 HC-$8.69 Plus Postage.
DESCRIPTORS	Administrative Problems; *Administrator Education; Catalogs; Decision Making; Development; Evaluation Methods; *Game Theory; Guidelines; Inservice Education; Interpersonal Relationship; Job Skills; Literature Reviews; *Management Games; *Military Training; *Officer Personnel; On the Job Training; Performance Based Education; Problem Solving; Research Projects; *Simulation; State of the Art Reviews; Task Performance; Teaching Methods
IDENTIFIERS	*Army; United States

ABSTRACT

A research project was undertaken to provide a foundation for future research on the efficacy of games and simulations for use in training and assessing junior company-grade officers working in administrative, nontactical support, and staff jobs. Based on survey interviews with nineteen incumbents of Finance, Adjutant General, and Quartermaster Corps first-tour, entry-level jobs, work requirements, problem analysis, decision-making, and interpersonal tasks and problems were identified. A comprehensive literature review and state-of-the-art survey of simulation were conducted, and 351 games and simulations were surveyed to determine relevance for junior officers. After initial screening, the remaining 183 were intensively analyzed to identify processes and parameters involved in the games and simulations, and a descriptive model was developed to delineate their attributes. A methodology for evaluating management games and simulations in terms of effectiveness, efficiency, and the descriptive model was developed and applied to the sample 183. Fifty-two games and simulations identified as appropriate for the focal officers were catalogued with descriptions and evaluations as Human Resources Research Organization Research Product 77-22 (bound at the end of this report). In conclusion, a framework and guidelines for constructing games and simulations for training and assessment purposes were also developed. (Author/ELG)

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ARI TECHNICAL REPORT
TR-78-A2

The Use of Management Games for Developing Army Officers in Administrative and Staff Jobs

by

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HUMAN RESOURCES RESEARCH ORGANIZATION
300 North Washington Street
Alexandria, Virginia 22314

FEBRUARY 1978

Contract DAHC 19-76-C-0048

Contracting Officer's Technical Representative Edward M. Sait
Personnel Accession and Utilization Technical Area, ARI

Prepared for

U.S. ARMY RESEARCH INSTITUTE
for the BEHAVIORAL and SOCIAL SCIENCES
5001 Eisenhower Avenue
Alexandria, Virginia 22333

CE 017 379

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EDUCATION & WELFARE
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Unclassified
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER
Technical Report TR-78-A2

2. GOVT ACCESSION NO.

3. RECIPIENT'S CATALOG NUMBER

4. TITLE (and Subtitle)
THE USE OF MANAGEMENT GAMES FOR DEVELOPING ARMY OFFICERS IN ADMINISTRATIVE AND STAFF JOBS

5. TYPE OF REPORT & PERIOD COVERED
Final Report
September 1976-August 1977

6. PERFORMING ORG. REPORT NUMBER
FR-ED(C)-77-23

7. AUTHOR(s)
Joseph A. Olmstead and B. Leon Elder

8. CONTRACT OR GRANT NUMBER(s)
DAHC 19-76-C-0048

9. PERFORMING ORGANIZATION NAME AND ADDRESS
Human Resources Research Organization (HumRRO)
300 North Washington Street
Alexandria, Virginia 22314

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
2Q762717A766

11. CONTROLLING OFFICE NAME AND ADDRESS
US Army Research Institute for the Behavioral
and Social Sciences, 5001 Eisenhower Ave.,
Alexandria, VA 22333

12. REPORT DATE
February 1978

13. NUMBER OF PAGES
163

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)

15. SECURITY CLASS. (of this report)
Unclassified

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Research monitored technically by Edward M. Sait of the Personnel Accession and Utilization Technical Area of ARI.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Leadership	Junior Officers
Training	Assessment
Management Games	Simulations

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report describes results of a project designed to review and develop research information which will aid in construction or experimentation with management games and simulations depicting the interpersonal relationships and decision-making and problem-solving processes of junior company-grade Army officers in administrative, nontactical support, and staff jobs.

A brief survey of a small sample of officer incumbents of Finance, Adjutant General, and Quartermaster Corps first-tour, entry-level jobs was

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

CE 017 379

20. conducted and job requirements and the major problem-analysis, decision-making, and interpersonal tasks and problems were identified.

A comprehensive review of literature and state-of-the art of simulation was conducted and 351 games and simulations were surveyed to determine relevance for junior officers in the focal jobs. After initial screening, the remaining 183 were intensively analyzed to identify processes and parameters involved in the games and simulations. A descriptive model delineating the processes and attributes evoked by them is presented in the report.

A methodology for evaluating management games and simulations in terms of effectiveness, efficiency, and the descriptive model was developed and applied to the sample of 183. Fifty-two games and simulations identified as appropriate for the focal officers were catalogued with descriptions and evaluations as HumRRO Research Product 77-22 (bound at the end of this report).

A framework and guidance for constructing games and simulations for training and assessment purposes was also developed and is presented in the report.

BRIEF

Requirement:

To review and develop research information which will aid in construction of and experimentation with management games and simulations simulating the interpersonal relationships and decision-making and problem-solving processes of junior company-grade officers working in administrative, non-tactical support, or staff jobs.

Procedure:

Instructional staff members at the Quartermaster School and the Army Institute of Administration were interviewed to identify entry-level job assignments, job requirements, and job problems of first-tour second lieutenants in Quartermaster, Finance, and Adjutant General Corps.

Nineteen job incumbents at Fort Benning, Georgia, were interviewed and completed a Task Inventory Questionnaire. Focus was upon interpersonal, problem-solving, and decision-making requirements.

A review of gaming literature and state of the art was conducted and a survey of 351 management games and simulations was performed to determine appropriateness for officers in the focal positions.

A descriptive model delineating processes and parameters involved in management games was developed.

A methodology for evaluating management games and simulations in terms of effectiveness, efficiency, and the descriptive model was developed and applied to 183 games and simulations.

A framework and guidance for constructing games and simulations to be used for training and assessment purposes was developed.

Findings:

Interviews with incumbents revealed a variety of assignments; however, a majority of respondents reported that "human" problems gave the greatest difficulty. The task inventory data produced 60 tasks judged to be common to the focal jobs.

An analysis of the present state of the art of business gaming and simulation was presented.

Application of the evaluation methodology produced 52 management games and simulations judged to be appropriate for officers in the focal jobs. A catalogue containing descriptions and evaluations of the 52 games and simulations was developed as a research product of the project.

Utilization:

The results of the task analysis will provide understanding of the interpersonal, problem-solving, and decision-making requirements of junior officers in the focal jobs.

The state-of-the art analysis, descriptive model, evaluation methodology, and framework for constructing games and simulations provide a sound foundation for future research on the use of simulation exercises for training and assessing junior officers.

PREFACE

The purpose of the research described in this report was to review and develop research information which will aid in construction of and experimentation with developmental games simulating the interpersonal relationships and decision making and problem solving processes of junior company-grade officers working in administrative, nontactical support, or staff jobs. The project was conducted by the Human Resources Research Organization (HumRRO) for the U. S. Army Research Institute.

Work on the project was begun in September 1976 and completed in August 1977 and was conducted by the staff of the Columbus Research Office of HumRRO's Eastern Division. Dr. Joseph A. Olmstead served as Project Director. The research staff consisted of Mr. B. Leon Elder and Mr. James A. Salter.

Some of the content of Appendix F, Methodology for Constructing Gaming Simulations, is an adaptation to business games of material developed in an earlier HumRRO project for ARI concerned with the use of games and simulations for military instruction and includes concepts and procedures to which Dr. Trueman R. Tremble of the ARI Fort Benning Field Unit made significant contributions.

Mr. Edward Sait of the Individual Training and Performance Research Laboratory, U. S. Army Research Institute, served as Contracting Officer's Technical Representative for the project.

The work was performed under Contract No. DAHC19-76-C-0048, "Review of Management Gaming for Developing Army Officers in Administrative and Staff Jobs."

CONTENTS

Page

OBJECTIVES 1

METHOD 2

Examination of Junior Company Grade Jobs 2

Review of Management Games and Simulations 5

Development of Model 8

Development of Methodology for Evaluation 9

Development of Framework for Construction of Games and Simulations 10

RESULTS 10

Requirements of Junior Officer Jobs 10

Review of Management Games and Simulations 23

Processes Involved in Business Games 37

A Methodology for Evaluation 43

A Framework for Development of Games and Simulations . . . 47

CONCLUSIONS 47

REFERENCES 51

SELECTED BIBLIOGRAPHY 53

APPENDICES

A Interview Guide 58

B Job Task Inventory 62

C Framework for Describing Games and Simulations 70

D Positions Occupied by Members of Job Incumbent Sample . 72

E Sample of Business and Management Games 74

F A Framework for Development of Management Games for Training and Assessment 87

FIGURES

F-1 Development of Gaming Simulations 91

TABLES

1 Incumbent Estimates of Type and Difficulty of Problems and Decisions 15

2 Significance of Junior Officer Tasks 18

THE USE OF MANAGEMENT GAMES FOR DEVELOPING ARMY OFFICERS IN ADMINISTRATIVE AND STAFF JOBS

During the last few years, the U. S. Army Research Institute has been actively engaged in a program of research and development designed to provide methods and techniques for developing the leadership effectiveness of junior officers. Emphasis in the program has been upon the use of realistic performance situations to assess leadership potential and to develop leadership skills.

Much of the past work has been devoted to assessment and training for jobs in combat units. However, an equally important requirement is for development of officers in administrative and staff positions. The project described in this report was designed to contribute to that requirement by providing research information that would aid in development of methods for improving the leadership effectiveness of officers in administrative, non-tactical support, and staff jobs.

OBJECTIVES

The general Technical Objective of the project described herein was to review and develop research information which will aid in construction of or experimentation with developmental gaming exercises simulating the interpersonal relationships and decision-making and problem-solving processes of junior company-grade officers working in administrative, non-tactical support, or staff jobs. The more specific research objectives were:

1. Determine job requirements and the major problem analysis, decision making, and interpersonal process requirements of junior company-grade officers in jobs which are primarily of an administrative, non-tactical support, or staff nature.
2. Review management games and simulations currently used in developing and/or assessing personnel for jobs similar to those encompassed by Objective No. 1.

3. Develop a "behavioral science" model of general processes and parameters involved in the above management games and simulations, paying particular attention to decision making, problem solving, and social interaction variables.

4. Develop a methodology for evaluating management games and simulations in terms of effectiveness, efficiency, and the behavioral science model, and apply this methodology to a sample of the reviewed games and simulations.

5. Devise and recommend a framework for constructing games and simulations suitable for use in developing and assessing the problem solving, decision making, and interpersonal skills required by junior company-grade officers for effective performance in administrative, non-tactical support, and staff jobs.

METHOD

The program of work was designed to follow a logical sequence of tasks commensurate with the above objectives. In the discussion of methodology which follows, task designations are those used in the plan of work originally proposed by HumRRO and coincide with the objectives listed above.

EXAMINATION OF JUNIOR COMPANY GRADE JOBS

The requirement for Task 1 was to "briefly sample and examine" junior company-grade level jobs of Army officers which are primarily of an administrative, non-tactical support, or staff nature. Thus, the objective was not to obtain a statistical sampling of jobs, but, rather, to insure coverage of types of jobs which would be most representative of the much larger variety to which junior officers may be assigned. For this project, "junior company-grade officers" were defined as second lieutenants. During early coordination with the ARI COTR, it was agreed that coverage should include Finance, Quartermaster, and Adjutant General Corps officers. It was felt that these branches represent the great majority of junior officers for whom management games and simulations would be appropriate.

Work on Task 1 was accomplished in two steps. First, a HumRRO staff member visited the Quartermaster School at Fort Lee, Virginia, and the

Army Institute of Administration (Finance and Adjutant General) at Fort Benjamin Harrison, Indiana, for the purpose of interviewing cognizant staff members concerning entry-level job requirements for their respective branches. Second, a sample of incumbent junior company grade Finance, AG, and Quartermaster officers at Fort Benning, Georgia, were interviewed and completed a job/task inventory questionnaire.

Service School Visits. For each branch (Quartermaster, AG, and Finance), five members of the respective instructional staffs at the service schools were interviewed both individually and collectively. First, the five officers for a branch were interviewed separately. Each interview required approximately one and one-half hours to complete. Then, the five officers met with the HumRRO staff member as a group. The researcher summarized his conclusions and led a two-hour discussion intended to resolve discrepancies and elaborate information covered in the individual interviews. Throughout, the objectives were to obtain the officers' views concerning (1) high frequency entry-level job assignments for junior officers, (2) performance requirements and most frequent tasks for the jobs, and (3) skills, knowledges, and processes required for effective performance in entry-level jobs. All interviews and discussions were tape recorded.

Although it would have been possible to obtain data concerning high frequency entry-level job assignments by analysis of officer assignment records, such a procedure would have been costly and time consuming. Since the service schools maintain statistics concerning assignments of their graduates, it was deemed to be more efficient to obtain the information from the schools. Emphasis was placed upon entry-level jobs because, even though an officer may serve in more than one assignment while in junior company-level grades, most such assignments are in jobs which can also be filled by first tour officers.

After completion of visits, transcripts of the interviews and discussions were analyzed. Lists of high frequency entry-level jobs for the three branches were developed and tentative listings of tasks performed in the jobs were prepared.

Job Incumbents. Analyses of the information provided by school staff members served as bases for development of a guide to be used in structured interviews of job incumbents. The interview guide appears in Appendix A.

The tentative task lists were used as the basis for development of a Task Inventory Questionnaire to be administered to job incumbents. In keeping with the purpose of the project -- to identify performance requirements and processes common to most administrative, non-tactical support, and staff jobs -- a single questionnaire applicable to all such jobs was developed. Thus, contrary to conventional task analysis procedures, task inventory items were stated at a level of generality sufficient to be appropriate for all junior officer jobs in the three branches and items of a technical nature specific to particular jobs were not included. The intent was to focus upon those tasks which mainly involve decision making, problem solving, and interpersonal processes and which are common to all jobs. Of necessity, this required that the items be designed at a more general level than is customary in conventional task analyses. The Task Inventory Questionnaire appears in Appendix B.

Information obtained at the service schools concerning the most common entry-level jobs was used to select a sample of incumbents of such jobs at Fort Benning, Georgia. With the assistance and cooperation of personnel of the Directorate of Evaluation, The Infantry School, 19 job incumbents were identified and HumRRO personnel interviewed and administered the Task Inventory Questionnaire to them during the period 22-30 November, 1976.

In accordance with the Statement of Work requirements to "briefly sample and examine" junior company level jobs, the sample of job incumbents was planned to be small. However, a larger number than that finally obtained was initially anticipated. Delays and difficulties in identifying suitable job incumbents encountered by the project officer responsible for scheduling the interviews at Fort Benning eventually reduced the sample to 19 officers. The sample was smaller than would have been preferred; however, it included an approximately equal distribution between the three branches of the service covered by the study, a variety of jobs within branches, and those jobs to which junior officers are most frequently assigned.

The sample included 7 AG, 6 Finance, and 6 Quartermaster officers. All were second lieutenants and all, with the exception of one, had been officers less than one year and were in their initial assignments as officers.

One officer had a previous assignment in the Infantry branch but had transferred to Quartermaster and was serving in his initial assignment in that branch. Two officers had enlisted service prior to commissioning. Minimum time on the job was 60 days, for one officer. Average time on the job was five months and three days.

With each officer, a HumRRO staff member first conducted the interview and, then, requested the respondent to complete the Task Inventory Questionnaire. Total time for completion of the interview and questionnaire was approximately one hour. All interviews were tape recorded for later analysis by the research staff.

After completion of interviewing, the responses were coded and both interview and questionnaire data were analyzed. Results are presented in a later section.

REVIEW OF MANAGEMENT GAMES AND SIMULATIONS

Task 2 involved a thorough sampling and review of management games and simulations currently in use in private, governmental, and military organizations for development and/or assessment of individuals for jobs similar to those identified in Task 1. Guidance provided in the Statement of Work stated that emphasis was to be placed upon games and simulations that involve a number of participants who interact in problem-solving and decision-making activities. "Short simulation exercises" were to be excluded. For this project, "short simulation exercises" was defined as simulations requiring less than one hour to complete. Furthermore, the reviewed games and simulations were to be directed toward such subsystems as supply, inventory control, maintenance, pay, and personnel. Although this constraint concerning relevant subsystems was taken as general guidance, it was not considered to be binding if, during the review, games or simulations which portrayed other contexts were judged to possess potential for use or adaptation with junior company-grade officers in the target jobs.

The main purpose of the sampling and review of management games and simulations was to develop a base of information about them that would permit (1) identification of the processes portrayed or evoked by them, and (2) evaluation of them to determine potential for use in the development and assessment of junior officers. To accomplish this purpose, a systematic framework for analyzing and documenting the characteristics of each game or simulation was developed. An outline of the characteristics included in the framework appears in Appendix C.

A survey of literature concerned with gaming, educational games, management and business games, simulations, and research on the use of games and simulations in personnel development was conducted. The following sources containing abstracts, annotated bibliographies, and reviews were used to select articles to be included in the survey:

Business Periodicals Index 1965 - 1976.

Psychological Abstracts, 1945 - 1975.

Special bibliography obtained from National Technical Information Service, U. S. Department of Commerce.

Belch, Jean. Contemporary Games: A Directory and Bibliography Covering Games and Play Situations Used for Instruction and Training by Schools, Colleges and Universities, Government, Business and Management, Vols. I and II. Detroit Michigan: Gale Research Company, 1974.

Boocock, Sarane S., and Shild, E. O. (Eds.), Simulation Games In Learning. Beverly Hills, California: Sage Publications, Inc. 1968.

Graham, Robert G., and Gray, Clifford F. Business Games Handbook. New York, N. Y.: American Management Association, 1969.

Greenlaw, Paul S., Herron, Lowell W., and Rowdon, Richard H. Business Simulation in Industrial and University Education. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1962.

Twelker, Paul A. Instructional Simulation: A Research Development and Dissemination Activity. Monmouth, Oregon: Teaching Research Division, Oregon State System of Higher Education, 1969 (ERIC Document ED 032659).

From the above sources, 212 articles and books were selected and reviewed. The reviewed materials included discussions of development methods, descriptions of research studies, and discussions of uses and merits of games and simulations.

Then, a large number of games and descriptions of games and simulations were reviewed. The following sources contributed significantly to the review:

Belch, Jean. Contemporary Games: A Directory and Bibliography Covering Games and Play Situations or Simulations Used for Instruction and Training by Schools, Colleges and Universities, Government, Business, and Management, Vols. I and II. Detroit, Michigan: Gale Research Company, 1974.

Graham, Robert G., and Gray, Clifford F. Business Games Handbook. New York, N. Y.: American Management Association, 1969.

Zuckerman, D., and Horn, R. (Eds). The Guide to Simulations/Games for Education and Training, 2nd Edition, Lexington, Mass.: Information Resources, Inc., 1973.

Descriptions and protocols of 44 games in libraries of Columbus College, Columbus, Georgia, and The Infantry School, Fort Benning, Georgia.

Descriptions and protocols of 20 games in library of HumRRO Columbus office.

Catalogue of business games published by Education Research, P. O. Box 4205, Warren, New Jersey 07060.

Descriptions of games used at The Quartermaster School, Fort Lee, Virginia.

In all, a total of 351 separate games and simulations were used. This number included only games or simulations subsumed very broadly under the rubrics of "business games" or "management games," and "educational games" which depict a business or organizational context and appeared to possess some potential relevance for junior officers. Military tactical or strategic games and simulations, as well as the large number of games used in elementary and secondary education, eg., in social studies programs, were not reviewed.

During the review, each of the 351 games or simulations were subjected to an initial screening to determine relevance for personnel in jobs similar to those which were the focus of this project. Many of the initial sample were eliminated because they were clearly not relevant, eg., "top management" games depicting entire business corporations and focussing upon the marketing and financial management decisions of corporate executives. Also, during the course of the review, it was found necessary to eliminate most games developed in university colleges of business and management because most courses for students use games which deal with high-level issues such as corporate financial or marketing decisions or ancillary topics such as economics and rarely are concerned with lower-level aspects that might be relevant for junior officers. On the other hand, it was found that a few games designed to be used in continuing education or extension programs to directly train lower-level business personnel have been developed by university instructors. Where identified and found relevant, these games were included in the final sample. Each game and simulation remaining in the sample was analyzed and a written summary was prepared following the framework shown in Appendix C. After the initial screening described above, 183 games and simulations remained in the sample.

DEVELOPMENT OF MODEL

For Task 3, the objective was to develop a "behavioral science model" of the general processes and parameters involved in management games and simulations appropriate for junior officers. Careful analysis of the purpose for which the model was to be used and of the great variety of games and simulations to which it would have to be applied led to the conclusion that a general model representing all functional relationships among processes and game parameters would be extremely unwieldy and, if simplified, would be applicable only to a limited range of game types. Since the main purpose of the model was to serve as the basis for development of a methodology for evaluating the suitability of games and simulations for developing and assessing junior officers, the decision was made that the "model" should be a descriptive framework which would delineate the processes evoked and the personal attributes developed or assessed by games and simulations. It was judged that limitation to these characteristics would most appropriately meet the requirements of parsimony and efficiency deemed desirable for descriptive models. It was decided that structural and administrative attributes of games and simulations would be more suitable for inclusion in the evaluation methodology to be developed in a later task.

Thus, the "model" was conceived as a descriptive framework designed to provide two major types of information. The first type encompassed the decision making, problem solving, and social interaction processes evoked by games and simulations and, accordingly, required to be executed by players. Performance of such processes requires skills on the part of players and, therefore, their evocation under proper conditions can result in learning and/or opportunity for assessment of the required skills. The second type encompassed personal predispositions which can be evoked by games and simulations and, accordingly, are susceptible of development and assessment.

The 183 games and simulations included in the above-described sample were analyzed to identify all possible processes and attributes developed or assessed by them. The analysis resulted in an extensive listing of processes and attributes containing many redundancies. Duplications and redundant items were then eliminated and the remaining list was examined to identify commonalities which would permit categorization according to a systematic model. The outcome was a 22 category framework to be described in the Results section of this report.

After development of the process model, the sample was reexamined to identify the development or assessment functions that could be served by each game or simulation. The outcome was a six-category system also included in the model to be described in the Results section of this report.

To be usable, the model must be capable of encompassing all of the various processes and attributes that may be involved in games and simulations of the types reviewed and, in addition, must cover most functions that might be served by them. To determine the utility of the model, 50 games and simulations were selected from the review sample and the model was applied to each. The objective was to determine whether the processes, attributes, and functions of each game or simulation could be placed meaningfully within one or more of the categories included in the model. It was found that one simulation, of a highly unique nature and only marginal relevance, could not be placed within any of the process categories of the model. On the other hand, the model was found to be readily applicable to 49 of the games and simulations. Thus, the relevance of the model for a wide range of games and simulations was judged to be confirmed and the model was accepted for inclusion in the products of the project.

DEVELOPMENT OF METHODOLOGY FOR EVALUATION

Task 4 involved development of a methodology to be used in evaluating the utility of games and simulations for development and assessment of junior company grade officers. The method must be capable of evaluating utility in terms of effectiveness, efficiency, and the processes and parameters depicted in the model developed in Task 3, as well as providing information concerning the administrative and structural characteristics of the game or simulation under evaluation.

The framework shown in Appendix C was incorporated into the evaluation methodology to provide information concerning administrative and structural characteristics and the model that was developed in Task 3 served as the basis for evaluating processes and functions.

Then, a system for evaluating effectiveness and efficiency was developed. Effectiveness is the ability of a game or simulation to accomplish the developmental or assessment purposes of a potential user. Efficiency is the effectiveness of a game or simulation in relation to its cost in terms of money, time, and personnel. The system is included in the description of the evaluation methodology in the Results section.

After development of the evaluation methodology, it was applied to the sample of 183 games and simulations which resulted from the initial screening. Each game or simulation was evaluated in terms of (1) relevance for junior company grade officers in administrative, nontactical support, and staff jobs, and (2) the methodology described above. This evaluation resulted in the further elimination of a number of games or simulations from the sample. Those remaining after evaluation were deemed suitable for use in their current form or for adaptation.

DEVELOPMENT OF FRAMEWORK FOR CONSTRUCTION OF GAMES AND SIMULATIONS

Requirements for Task 5 involved the provision of guidance for the construction of games and simulations for both developmental and assessment purposes. Relying heavily upon previous work by other researchers and the HumRRO project staff, frameworks for construction were adapted or developed and guidance to be followed in development of games and simulations was prepared. In this work, heavy emphasis was placed upon provision of as complete guidance as possible within the limits of an approach which must, of necessity, be generally applicable to a wide variety of situations and must encompass both developmental and assessment purposes.

RESULTS

REQUIREMENTS OF JUNIOR OFFICER JOBS

The purpose of visits to the Quartermaster School and the Army Institute of Administration (AG and Finance) was to obtain information concerning jobs to which junior company-grade officers are most frequently assigned during first tours in the service and to identify typical activities and problems so that a tentative task inventory could be developed. Thus, the visits were to provide initial information upon which the "brief sampling" of junior officer jobs could be based.

Interviews with cognizant staff members at the schools revealed that most junior officers are assigned to a fairly narrow range of jobs during their initial tours of duty. Following are the jobs judged by staff members as those to which most officers are initially assigned.

Finance Corps:

1. Disbursing Officer.
2. Military Pay Officer.
3. Travel Officer.
4. Commercial Accounts Officer.
5. Executive Officer, Finance Company.

Adjutant General Corps:

1. Assistant Chief, Administrative Services.
2. Assistant Chief, Personnel Management.
3. Assistant Adjutant, Battalion or Brigade (Asst. S-1).
4. Postal Officer.
5. Executive Officer, Adjutant General Company.

Quartermaster Corps:

1. Platoon Leader, QM Company.
2. Assistant S-4, Battalion or Brigade.
3. Subsistence Officer.
4. POL Officer.
5. Depot Section Chief.

This information was useful for assisting the research staff to identify individuals to include in the study of jobs and to identify potential tasks for inclusion in the task inventory to be discussed below.

The interviews also revealed a wide variety of tasks, activities, and problems involved in the above jobs. Analyses of the interviews served as bases for development of a structured interview guide (Appendix A) and tentative list of tasks which appeared to be common to the jobs identified above. The interview and Job Task Inventory Questionnaire were administered to a sample of junior officer job incumbents at Fort Benning, Georgia.

The Survey Sample. The data presented below are based upon a sample of 19 officers (7 Adjutant General, 6 Finance, and 6 Quartermaster) described in the METHOD section of this report. Positions to which the officers were assigned at the time of the survey are shown in Appendix D. It is apparent that the positions occupied by members of the sample are representative of those to which junior officers are most frequently assigned.

Principle Duties. Following are summaries of the principle duties reported by incumbents.

Adjutant General Officers

Monitor and coordinate activities of Redeployment Section.
Supervise postal section.
Process officer assignments.
Supervise administrative services.
In charge of nonappropriated funds.
Routine administration of section in Infantry School.
Writing correspondence.
Maintaining files.
Supervise enlisted and civilian personnel.
Write letters of instruction.
Interpret personnel regulations.
Screen and maintain personnel records.
Identify errors in personnel records.
Company supply officer.
Company property officer.
Security Officer.

Quartermaster Officers

Write weekly logistics notes.
Update supply SOP's
Inspect company supply rooms.
Inspect dining facilities.

Advise on proper ways to run a dining facility.

Monitor brigade supply procedures.

Conduct POL inspections.

Supervise storage and distribution facility for POL.

Supervise civilian and enlisted personnel in POL facility.

Finance Officers

Prepare and manage USAIS budget.

Approve TDY funds and civilian overtime funds.

Make budget reports.

Control and disburse cash funds.

Supervise disbursement clerks.

Work with people who have problems with their pay.

Organize office staff.

Accomplish special audits.

Supervise pay records for separations, in/out processing, and reenlistments.

Control records and reports.

Supervise personnel who handle pay inquiries.

Insure that every person is paid properly and accurately each month.

Types and Difficulty of Problems. Incumbents were asked to describe the types of problems they are required to handle in their jobs. Following are representative problems reported by incumbents.

"Civilians do not accept military supervision."

"Varying interpretations of regulations."

"Problems in getting people to meet suspense dates."

"Expediting activities to upgrade mess facilities."

"Getting people to understand why their pay is changed."

"Acquiring information needed for reports from the many sections of finance office."

"Making decisions as to how much to pay in partial payments."

"Counseling personnel when we receive derogatory reports on them"

"Supervising approximately 100 people in groups headed by a mixture of civilians and NCO's."

"People problems. Seeing they are qualified, available, and prepared for redeployment."

"Coordinating with Battalion S-1's to get commitments accomplished."

"Getting people to follow regulations."

"Bad debts."

"Race relations counseling."

"Briefing superior officers and preparing for review boards."

From the above, it is apparent that most of the activities viewed by these junior officers as "problems" involve interactions with people -- subordinates, superiors, civilian employees, and "publics" which contact them for information or assistance.

Interview respondents were requested to estimate the percentage of problems encountered that were technical, administrative, and human problems and to rate the difficulties of problems and of required decisions on a 10 point scale. Table 1 summarizes results for these items.

Job incumbents estimated that approximately 39.47 percent of encountered problems are mainly technical in nature, 53.42 percent are administrative, and 56.05 percent are human problems. Respondents were not aware of the nature of all three categories of problems in advance of making estimates for each and, accordingly, estimates frequently resulted in totals greater than 100 percent for the three. During discussions of problems, respondents repeatedly emphasized that most problems contain important human elements and many respondents insisted that, although they could conceptually separate technical and administrative problems, they could not isolate human problems from the other two categories. It appears that the results should be interpreted as indicating that slightly more than one-half of the problems encountered by junior officers contain "human" elements at least to some extent. However, for any repetition of this study, it is recommended that respondents be told the three categories of problems prior to making any estimates.

With one exception, no differences were found between branches in estimates of percentages of types of problems encountered. In the area of human problems, AG respondents reported much larger percentages (Mean = 72.14; SD = 31.74) than either QM (Mean = 45.83; SD = 41.40) or Finance

Table 1

INCUMBENT ESTIMATES OF TYPE AND DIFFICULTY OF
PROBLEMS AND DECISIONS

	Mean	Standard Deviation
Types of Problems:		
Percent mainly Technical	39.47	32.53
Percent mainly Administrative	53.42	39.02
Percent mainly Human	56.05	36.19
Difficulty of Problems Encountered[a]	5.69	1.29
Difficulty of Required Decisions[a]	4.47	2.04

[a] Based on a 10 point scale of difficulty.

(Mean = 47.50; SD = 34.89). Clearly, AG officers encountered a larger number of human problems, as might be expected from the nature of AG work. The large standard deviations, coupled with the fact that only one difference occurred between branches, indicates wide variability between jobs, or possibly respondents, within the sample.

Respondents were requested to provide a rough estimate of problem and decision difficulty "on a scale of from one to ten." Mean estimates were slightly above the midpoint of the scale for problem difficulty and slightly below the midpoint for decision difficulty. Ranges were 4-8 for problem difficulty and 2-8 for decisions. Thus, although a few individuals rated difficulty toward the upper end of the scale, most incumbents do not view the problems or decisions they encounter as exceedingly difficult and many reported they felt the problems and decisions are not especially challenging. Most respondents reported that their decisions are routine and not complex. Only two individuals stated that they were sometimes required to make decisions that might be considered "complex." Decisions are mainly routine choices made in accordance with regulations or detailed guidance.

Skill Requirements. Respondents were requested to identify "the three most important skills an officer needs to be successful in your job." Twenty-nine percent of the skills reported fall into the Technical area, eg., accounting skills, mathematics, knowledge of supply system, application of technical knowledge to problems. On the other hand, fifteen percent of the reported skills were Administrative (use of administrative procedures, writing skills, preparation of reports). By far the greater percentage (55 percent) were "human" or interpersonal skills, eg., working with people, communicating with people, leadership, getting along with superiors, setting the example, concern for people, etc. Thus, it is apparent that, from the viewpoint of job incumbents, the human aspects of the junior officer's job require the greatest skills.

Training Requirements. Respondents were asked whether the training they had received prior to assuming their jobs was adequate and what kinds of training would be most helpful for preparing officers to perform the jobs. Among the 19 officers interviewed, 14 responded that their training was inadequate. Five respondents felt that they had received adequate training.

Among the respondents reporting that training was adequate, three were Adjutant General, one was Finance, and one was Quartermaster officers.

When asked the reasons for their evaluations of training adequacy, those officers who felt training was not adequate indicated that the service schools do not provide sufficient training in the human aspects of the job. Furthermore, most felt that the training was especially deficient in providing training in solving actual problems and coping with real tasks encountered by officers on the job. Most respondents felt that, in addition to conceptual content of a technical nature, training that would be most helpful to junior officers should include problem-centered instruction concerned with leadership, supervision, interpersonal relations, and experience in solving actual technical problems.

Tasks Performed by Junior Officers. The 19 officers completed a Job/Task Inventory Questionnaire containing 90 tasks (Appendix B). For each task, a respondent decided whether his job required him to perform the task at least to some extent. If the task was a part of the job, a 10 point scale was used to rate the extent to which it was a significant part of the job, in terms of importance and time spent. If the job did not require performance of the task, a rating was not made.

Table 2 summarizes percent of subjects responding and significance ratings for each task. "Percent Responding" is the percent of the officers in the sample who rated the task and, by so doing, indicated that the task was a part of the job at least to some extent. Mean ratings show the degree of significance attributed to the tasks. Since concern in this project is with the significance of tasks to the typical job of junior company-grade officers in administrative, non-tactical support, and staff positions, means and standard deviations for significance ratings are based upon an N of 19, ie., both respondents and nonrespondents were included in the computations, with nonrespondents receiving a score of "0". In this way, means provide a more accurate reflection of the significance of tasks to the typical job which is a compositeof all 19 of the positions included in the sample. The percent of jobs which include any particular task may be seen by referring to the Percent Responding column of Table 2.

Table 2

SIGNIFICANCE OF JUNIOR OFFICER TASKS

Task[a]	Percent Responding	Mean	Standard Deviation
Troubleshoot special problems as they arise (71)	94.74	8.11	2.69
Identify alternative courses of action (54)	100.00	7.95	1.18
Plan own work (34)	94.74	7.89	2.42
See that work of unit gets done efficiently and effectively (4)	89.47	7.84	2.95
Decide on best course of action from among alternatives (55)	100.00	7.79	2.10
Enforce procedures and regulations (86)	94.74	7.63	2.59
Provide information to superiors (59)	94.74	7.47	2.48
Make recommendations to superiors (3)	100.00	7.37	2.14
Comply with orders and directives (10)	100.00	7.37	2.41
Make routine technical decisions according to procedure or regulation (56)	94.74	7.37	3.06
Organize/provide information for superior (13)	94.74	7.16	2.57
Write letters and reports (7)	94.74	7.05	2.84
Check accuracy of facts, data or information (70)	100.00	7.05	2.51
Solve routine technical problems (43)	100.00	6.95	2.86
Advise subordinates on ways to handle work problems (18)	89.47	6.89	3.09
Participate in joint decision-making with superiors (51)	100.00	6.79	2.72
Formulate policies (37)	94.74	6.74	2.56
Coordinate with other units (67)	94.74	6.74	2.98

Table 2 Continued

SIGNIFICANCE OF JUNIOR OFFICER TASKS

Task[a]	Percent Responding	Mean	Standard Deviation
Keep subordinates informed about current situation (68)	89.47	6.68	3.00
Brief superiors (2)	94.74	6.63	2.69
Give orders and instructions about work (22)	89.47	6.53	2.95
Collect technical information or data (69)	84.21	6.42	3.43
Analyze technical problems (75)	84.21	6.42	3.72
Identify operational problems (83)	89.47	6.42	2.78
Inspect work upon its completion by subordinates (90)	89.47	6.42	3.15
Apply technical knowledge to solution of work problem (76)	84.21	6.37	3.44
Check on progress of work of unit (87)	84.21	6.32	3.32
Communicate and interpret policy to subordinates (58)	89.47	6.26	3.23
Exchange information and ideas with subordinates (65)	84.21	6.26	3.14
Solve complex problems (44)	94.74	6.16	3.40
Provide information to people outside of unit (60)	84.21	6.16	3.30
Participate in joint decision-making with peers (52)	84.21	6.11	3.13
Exercise quality control over work of unit (85)	84.21	6.11	3.54
Implement policies (6)	89.47	6.05	3.03
Keep informed on developments in technical speciality (73)	84.21	6.05	3.54

Table 2 Continued

SIGNIFICANCE OF JUNIOR OFFICER TASKS

Task[a]	Percent Responding	Mean	Standard Deviation
Execute routine (nondecision) procedures in your technical speciality (77)	89.47	6.05	3.22
Organize logical priorities of work (79)	89.47	6.05	3.31
Check accuracy of work of subordinates (20)	89.47	6.00	3.32
Obtain information from people outside of unit (61)	89.47	6.00	2.87
Organize resources for task accomplishment (82)	84.21	6.00	3.13
Review work of subordinates (23)	89.47	5.95	3.14
Review decisions and actions of subordinates (88)	78.95	5.89	3.68
Make Complex technical decisions (57)	84.21	5.84	3.37
Check on progress of work of subordinates (19)	89.47	5.79	3.01
Motivate subordinates (31)	84.21	5.79	3.36
Analyze technical data (72)	78.95	5.79	3.72
Make progress reports to superiors (12)	89.47	5.63	3.04
Evaluate performance of subordinates (17)	84.21	5.63	3.48
Provide technical know-how for work of unit (74)	84.21	5.53	3.47
Participate in meetings and conferences with representatives of other units (62)	89.47	5.47	3.01
Participate in joint decision-making with subordinates (53)	78.95	5.42	3.17
Maintain records (9)	89.47	5.37	3.15
Develop teamwork within unit (50)	78.95	5.32	3.74
Brief on results of finished work (8)	89.47	5.26	2.90

Table 2 Continued

SIGNIFICANCE OF JUNIOR OFFICER TASKS

Task[a]	Percent Responding	Mean	Standard Deviation
Counsel subordinates on ways their performance can be improved (32)	84.21	5.26	3.46
Plan best use of available facilities (33)	78.95	5.26	3.46
Set performance standards for subordinates (25)	73.68	5.05	3.64
Mediate disputes or tensions between subordinates (66)	78.95	5.05	3.81
Organize work of unit (78)	84.21	5.05	3.41
Participate in group planning sessions with supervisors and peers (41)	84.21	5.00	2.62
Conduct formal performance evaluation of subordinates (30)	68.42	4.89	3.96
Set performance objectives for subordinates (24)	78.95	4.74	3.52
Assist subordinates in their work (21)	84.21	4.68	3.25
Project manpower requirements (42)	68.42	4.68	3.64
Counsel subordinates on human relations (28)	84.21	4.63	3.59
Counsel subordinate who has problem (29)	84.21	4.58	3.76
Establish work procedures (81)	68.42	4.47	3.60
Plan work of subordinates (36)	78.95	4.32	3.40
Critique subordinates' performance (27)	68.42	4.16	3.72
Participate in meeting and conferences as subordinates of larger unit (63)	78.95	4.16	2.95
Brief subordinates on job performance requirements (64)	78.95	4.11	3.28
Define subordinates responsibilities (16)	73.68	4.05	3.32
Set performance goals and standards for unit (38)	68.42	4.05	3.60

Table 2 Continued

SIGNIFICANCE OF JUNIOR OFFICER TASKS

Task[a]	Percent Responding	Mean	Standard Deviation
Check on adherence to unit work schedules (89)	73.68	4.05	3.15
Interview and select subordinates (1)	84.21	3.95	2.84
Estimate time/costs/manpower to accomplish planned tasks (39)	68.42	3.95	3.47
Schedule work for unit (80)	68.42	3.95	3.39
Plan work of unit (35)	68.42	3.89	3.16
Determine requirements and obtain supplies and equipment for unit (11)	78.95	3.79	3.38
Hold group planning sessions with subordinates (40)	52.63	3.63	3.35
Prepare and maintain work flow charts and graphs (84)	78.95	3.63	2.81
Conduct or supervise on-the-job training for military subordinates (48)	63.16	3.58	3.76
Review subordinates qualifications and make work assignments (26)	73.68	3.42	3.10
Plan training for subordinates (45)	57.90	3.11	3.33
Prepare budgets (5)	52.63	2.95	3.50
Procure supplies (14)	57.90	2.63	3.06
Conduct or supervise on-the-job training for civilian subordinates (49)	47.37	2.32	3.53
Maintain inventory records (15)	47.37	2.26	3.46
Conduct formal training programs for military subordinates (46)	42.11	1.53	2.65
Conduct formal training program for civilian subordinates (47)	36.84	1.11	2.28

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[a] Numbers in parentheses following task description are questionnaire item numbers

The range of percent responding is from 100 to 36 percent. However, 80 of the tasks were found to be performed by at least two-thirds (66 percent) of the sample. This result indicates significant simularities in the jobs studied. In short, the 80 tasks were common to the majority of the jobs in the sample, thus indicating similarities in types of tasks across the jobs and branches.

The range of task significance is from 8.11 to 1.11, a ratio of approximately 7 to 1. This finding, together with percentages responding to most items, indicates that respondents feel that, within their jobs, tasks can be ordered, with some being very important for job accomplishment and others being of relatively less importance.

Among the 80 tasks occurring in two-thirds or more of the jobs, 60 received mean significance ratings of 5 (Moderate Significance) or higher. It is concluded that the 60 tasks which received mean ratings of 5 or higher are representative of administrative, non-tactical support, and staff jobs held by junior company-grade officers and are of sufficient importance to job performance as to warrant consideration for inclusion in development and assessment programs involving management games.

REVIEW OF MANAGEMENT GAMES AND SIMULATIONS

An intensive review of literature concerned with the use of games and simulations for developmental and assessment purposes was conducted. In addition, a large number of games and simulations were surveyed. The results of this review and survey, together with the already existing knowledge and experience of the HumRRO research staff, were the foundations for the results presented in the remainder of this report.

In this section, a brief discussion of important issues identified during the review will be presented. Key references which should be useful to future researchers will be included. Finally, results of the survey of games and simulations will be reported. Additional information and references which resulted from the literature review will be presented in later sections of this report.

Current State of the Art. Games and simulations for teaching tactics have been in use in the American military services for over a hundred years and, in one form or another, war games were used in Europe as early as the 18th century.[1] On the other hand, the use of games and simulations outside of the military services, or within the services for other than tactical training, is quite recent. Although simplified role simulations of organizations have been in use for approximately twenty-five years and situational tests for assessment purposes go back even farther,[2] so-called "management games" only came into use with the advent of the computer. Since then, however, games and simulations have become quite popular in both business and in education. The result has been the evolution of a body of knowledge and a technology of game and simulation development which is still in its early stages but is making rapid progress. Thus, terminology has become somewhat systematized and techniques for the design and construction of games and simulations have been refined to the point that concrete guidance can be provided.

According to current generally accepted terminology,[3] a "game" must involve competition and have rules for determining a winner and loser. On the other hand, a game does not necessarily possess the property of portraying, to any degree, the real world. In contrast, the principal property of a "simulation" is a deliberate physical, procedural, or symbolic representation of a real-world system. Although simulations may model real-world systems at widely differing levels of abstraction, the only necessary property is a model of some sort. Of course, competition is not a necessary property of a simulation. Thus, not all games model the real world and not all simulations possess the property of competition. However, many training or assessment vehicles possess both the essential properties of a game and those of a simulation. Properly, these are called "gaming simulations."

So-called "management games" are usually gaming simulations -- they most often model the world of business, there is competition between players or teams, and there are rules for determining winners and losers. On the other hand, some "management games" do not possess the elements of competition -- players perform roles and make decisions in a business situation but results are solely in terms of the balance sheet of the modeled company and no competition between players is involved. Under such conditions, the device is a simulation and not a game.

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[1] Young, J.P. A Survey of Historical Developments in War Games. Bethesda, Maryland: Operations Research Office, The Johns Hopkins University, Staff Paper ORO-SP-98, March, 1959.

[2] OSS Assessment Staff. Assessment of Men: Selection of Personnel for the Office of Strategic Services. New York, N.Y.: Rinehart and Co., Inc., 1948.

[3] Barton, R.F. A Primer on Simulation and Gaming. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970.

Confusion in terminology and diversity of technique and application have characterized the field of gaming and simulation from inception. The present field reflects debts to mathematics, operations research, systems science, business, education, and role theories from both psychology and sociology, and, accordingly, terminology and techniques vary widely. The result has been semantic and conceptual confusion which is beginning only now to be resolved. Fortunately, recent work by a few individuals is bringing some order to the field.[1]

The diversity mentioned above has resulted in wide-ranging use of games and simulations in a variety of contexts. Zuckerman and Horn's Guide to Simulation Games for Education and Training reviewed 613 games and simulations available to the public.[2] A recent survey of the American Association of Collegiate Schools of Business found that 91 percent of the respondents reported using games in the classroom.[3] When there is added to these figures the large unreported number of games and simulations used within business and governmental organizations, the total number that are actually in use may be as much as four or five times greater than those listed in Zuckerman and Horn's guide.

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[1] Duke, R.D. "The Language of Gaming." in S. Kidder and A. Nafziger (Eds.). Proceedings of the National Gaming Council's Eleventh Annual Symposium. Baltimore, Md.: The Johns Hopkins University, Center for Social Organization of Schools, 1972; Greenblatt, S.C., and Duke, R.D. Gaming-Simulation: Rationale, Design, and Applications. New York, N.Y.: Sage Publications, 1975; Hansen, D.H., Manning, P.C., and Johnson, B.F. A Systematic Approach to Learning Simulations. Tallahassee, Fla.: Florida State University CAI Center Technical Memorandum No. 54, (Office of Naval Research). 1972; Twelker, P.A., and Layden, K. Educational Simulation/Gaming. Stanford, Calif.: ERIC Clearing House on Media and Technology, 1972.

[2] Zuckerman, D., and Horn, R. (Eds.). The Guide to Simulations/Games for Education and Training, 2nd Edition, Lexington, Mass.: Information Resources, Inc., 1973.

[3] Graham, R.G. and Gray, C.F. Business Games Handbook. New York, N.Y.: American Management Association.

Widespread use has been accompanied by an expansive body of literature. The best and most complete bibliography contains 2,375 entries.[1,2] Unfortunately, much of the literature, especially that concerned with business games, is anecdotal or designed to sell the reader on the benefits of gaming. Substantive research is in short supply.

Classification of Business "Games". Because one purpose of this project was to contribute to the ability of future researchers to both evaluate and construct games and simulations, methods of classifying business "games"[3] are important. One of the most obvious divisions is into computer-assisted games on the one hand and manual games on the other. The relative merits of the two types are hotly argued. For the most part, however, differences between them are merely the degree of complexity of the game model that is used and, accordingly, the number and complexity of the calculations required to produce results, the amount of time available for production of results, and the extent to which formulas for scoring include random or probabilistic factors. Where probabilistic factors are introduced, computers are more frequently used; however, some well-known games use probabilistic computations yet remain completely manual. The McKinsey-Harvard Business Review Game[4] is completely manual and uses a random number table to allocate sales and determine the results of expenditures for advertising, R and D, etc. Like many

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[1] Belch, Jean. Contemporary Games: A Directory and Bibliography Covering Games and Play Situations or Simulations Used for Instruction and Training by Schools, Colleges and Universities, Government, Business and Management, Vols. I and II. Detroit, Michigan: Gale Research Company, 1974.

[2] This bibliography is recommended as a starting point for any researcher who undertakes to become familiar with the field of gaming and simulation.

[3] For convenience, the terms "game," "business game," or "management game" will be used to refer to games, simulations, and gaming simulations unless the distinction is required for effective communication.

[4] Andlinger, G.R. "Business Games - Play One," Harvard Business Review, March-April, 1958.

military tactical gaming simulations, the McKinsey-HBR game uses a game board and counters, which is quite rare among business games. Although computer games are highly popular, especially for large general-management games, manual games are more prevalent.

For this review, a useful way of classifying games was by type of activity that is modeled. Thus, there are general management games, functional games, and industry games. Of these, the best known are the so-called "general management" games, which are computer-scored, interactive, competitive, predominantly deterministic, and designed for team play. All major functions of a fictional corporation are included, decision-making is at the top management level and the problems are usually concerned with the allocation of resources to achieve maximum profitability. Because of the organizational levels portrayed, usually top management, general management games were found to be not relevant for this project.

Of particular relevance for this project are functional games. There are now a great many such games that focus upon a particular management function such as marketing, production, inventory control, logistics, etc. These games are most often aimed at lower and middle levels of management. They vary greatly in complexity, may be manual or computer assisted, interactive or noninteractive, competitive or noncompetitive, deterministic or random, teams or individual players, depending upon the function depicted. Certain functional games concerned with inventory control and logistics were found to have potential for use with junior officers.

Finally, there are games which deal with the problems of particular industries. Some are general management games focused on a specific industry, e.g., the well known and very complex Carnegie Tech Game[1] which depicts the detergent industry. Others might be classified as functional games for particular industries. These games were also found to be, for the most part, not relevant.

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[1] Cohen, K.J., Cyert, R.M., Dill, W.R., Kuehn, A.A., Miller, M.H., Van Wormer, T.A., and Winters, P.R. "The Carnegie Tech Management Game." In H. Guetzkow (Ed.), Simulation in Social Science Readings. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1962, pp. 104-123.

Another way of classifying games is whether they are "interpersonal-ascendant" or "media ascendant".[1] "Interpersonal-ascendant gaming simulations" refers to those vehicles which are characterized by role playing, decision making, and heavy player-interactions. The instructional burden is carried largely by interaction between players. Thus, the learning is predominantly concerned with human interaction. Technical content plays a relatively minor role. Although such simulations are widely used in business training, good descriptions of them are scarce. Examples of elaborate simulations from contexts other than business are Psych City, a simulated community[2] and HumRRO's FORGE simulation of an Army Tactical environment.[3] Design and development of interpersonal ascendant simulations require consideration of a number of issues, some of which are characteristic of all simulation design and others which are unique to the interpersonal domain.[4]

Media ascendant gaming simulations are characterized by the instructional burden being carried largely by media., e.g., computer output, films, slide-tapes, etc. Examples of media ascendant simulations range from flight trainers to computer-based business games and media-based environmental simulators.

The distinction between interpersonal-ascendant and media-ascendant games is important because whether a game is interpersonal - or media-ascendant determines, in large part the nature of the processes evoked by it. Media-ascendant games are predominantly limited to technical decision making and problem solving processes, whereas interpersonal-ascendant games focus much more upon interaction between people.

Use of Games for Personnel Development. Business games have been used almost solely for educational and training purposes. As a result of very wide use, numerous claims concerning the efficacy of games abound and some attempts have been made to systematize these claims. After a review of over 300 published articles on gaming, Schriesheim[1] identified the 10 most commonly-made claims about what business games will teach or foster. They are decision-making skills, planning and forecasting, recognition of interrelations, high motivation and interest, use of specific techniques, interpersonal skills, accepting decision consequences, organizing ability, communications skills, and acceptance of the computer. Schriesheim was careful to point out that many claims are unsubstantiated and he called for systematic research on the teaching efficacy of business games.

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[1] Twelker, P.A., "Designing Simulation Systems," Educational Technology, October, 1969.

[2] Cohen, R., McManus, J., Fox, D., and Kastelnik, C. Psych City: A Simulated Community. New York, N.Y.: Pergamon Press, Inc., 1973.

[3] Olmstead, Joseph A., Christensen, H.E., and Lackey, L.L. Components of Organizational Competence: Test of a Conceptual Framework. Alexandria, Va.: Human Resources Research Organization, Technical Report 73-21, 1973.

[4] Zelditch, M., and Evan, W.M. "Simulated Bureaucracies: A Methodological Analysis." In H. Guetzkow (Ed.), Simulation in Social Science: Readings. Englewood Cliffs, N.J.: Prentice-Hall, Inc., pp. 48-60.

Despite the widespread claims, hard evidence concerning the instructional effectiveness of games and simulations is, at best, inconclusive.[2] This lack of strong empirical support seems to fly in the face of the large and almost uniformly positive body of anecdotal, case study, and single-game evaluation reports which are abundant in the literature. Games and simulations have a large amount of face validity despite their lack of solid empirical validation.

Inconclusiveness of the evidence cannot be taken as a reason for finally deciding that games or simulations are ineffective for developmental purposes. The fact is that, despite the abundant literature, the body of research in which one can have confidence is exceedingly small and quite contradictory. Reasons for this condition seems to be as follows:

(1) Studies which use control groups and adequate statistical analyses are in very short supply.

(2) Wide differences exist in the games or simulations which have been adequately evaluated. They vary greatly in complexity and most were designed for different purposes and possess different structural, content, and administrative characteristics.

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[1] Schriesheim, C.A., "Business Simulation Games: A Review of the Evidence and a Suggested Course of Action." Proceedings of the Midwest AIDS Conference. East Lansing, Michigan: American Institute for Decision Sciences, 1973.

[2] Greenblatt, S.C. "Gaming Simulations for Teaching and Training: An Overview." In Greenblatt and Duke, 1975, op. cit.; Twelker and Layden, 1972, op. cit.; Schriesheim, 1973, op. cit.

(3) The administration of games and simulations is not standardized and the instructional components accompanying them, if any, vary greatly.

(4) Instructional objectives are often not clear or carefully derived, and learning objectives and game structure are often not clearly related.

(5) Most research is of the single study variety. The studies are usually evaluative of a single game or simulation and comparative studies are almost nonexistent.

The upshot is that, while it appears that games and simulations are probably effective for development of certain types of skills, evidence is simply not available to make sweeping conclusions. Nevertheless, it seems reasonable that well-designed games, with effective instructional components, should be effective for accomplishing certain types of instructional objectives. On the other hand, like any other instructional method, poorly-designed, ill-conceived games without carefully contrived instructional components will not be very effective. Effectiveness seems to depend as much upon the capabilities of particular game and instructional system developers as upon whether the games or simulations are the method of choice. Of course, effectiveness depends greatly upon appropriate matching of type of game or simulation to the desired instructional objectives. Probably the greatest reason for poor results is failure to derive good instructional objectives, select a type of game or simulation that is most appropriate for the objectives, and construct or adapt a particular game or simulation so that it will have a maximal probability of achieving the objectives. As just one example, simulations that are strongly media-ascendant provide restricted opportunities for complex interpersonal interaction -- unless the designs include special provisions to insure that such interaction will occur. Media-ascendant simulations without such provisions would not be the most appropriate for training objectives concerned with interpersonal skills. It should go without saying that games or simulations are not suitable for all types of objectives.

After the extensive literature review conducted for this project, it was concluded that games, simulations, and gaming simulations serve some training functions better than others. A brief summary follows:

(1) Acquisition of Knowledge. Although some educational games may be useful for transmitting simple knowledge, eg., definitions, taxonomies, etc., games, especially business games, are not very effective for initially transmitting complex knowledge. Other methods are better.

(2) Reinforcement of Knowledge. Some games are useful for reinforcing knowledge already acquired in other contexts. Most business games do not have this characteristic.

(3) Application of Knowledge. Many games are valuable for providing practice in the application of previously-learned knowledge to practical problems. The value for this purpose of any particular game is determined by the validity of its model (the degree to which the game models the real world), its design, and the presence or absence of an associated effective instructional component.

(4) Application of Principles. Well-designed and valid gaming simulations permit students to test previously-learned principles through application of them to varied problems and situations. This helps students to develop skill in adapting principles to the variability and ambiguity of the real world.

(5) Development of Skills. When appropriately designed, games are quite effective in developing both cognitive and behavioral skills. With business games, skills that can be developed may include technical, administrative, or interpersonal areas.

(6) Development of Attitudes. In certain performance areas, eg., leadership, interpersonal behavior, group interaction, effectiveness requires both conceptual understanding and positive attitudes. Participation in business games under positively reinforcing conditions can help integrate attitudinal with conceptual content. In addition, participation in games may lead to development of positive attitudes toward use of procedures or techniques advocated by instructors or official doctrine.

In a more general vein, it appears that business games have a number of identifiable advantages and a few disadvantages. Following are some advantages:

(1) Games stimulate sustained learner activity and learner motivation during training sessions.

(2) Games provide opportunities for presenting in a realistic fashion a progressively increasing number and complexity of problems. This is especially valuable for making complex material meaningful to students.

(3) Games make instructional content more relevant to the student's own experience.

(4) Games can increase understanding of the relationships between complex factors that are difficult to treat in an integrated fashion in conventional classroom instruction.

(5) Games make it possible for every student in a class to actively participate rather than merely observe.

(6) Games provide opportunity to learn interpersonal and other skills not readily acquired through conventional instruction.

Some of the more relevant disadvantages are:

(1) Games and simulations may cost more to develop than conventional types of instruction.

(2) Learning through games and simulations may be more variable than through conventional instruction because there is less control over what is learned.

(3) Less control of student activities is possible with games and simulations.

(4) There is some risk that students may overgeneralize from game experience to the real world.

(5) Games can be so attractive to instructors and training managers that they may be inappropriately substituted for conventional modes of instruction. Games should compliment proven conventional modes and not supplant them.

(6) Games and simulations take time to play.

(7) There is a risk that mislearning may occur -- if behavior that is appropriate to the game is not appropriate to real life or if effects of player actions on the game do not correspond to those likely to occur in real life.

All uses of games, simulations, and gaming simulations for educational and training, ie., developmental, purposes rest upon one fundamental premise.

This premise is that learning of some sort will occur through the students' experiencing of relevant and meaningful activities, problems, and situations, and of the consequences of their actions.

All training which rests upon the above premise can be subsumed under the rubric "experiential training." In all such training, provision is made for students to experience the dynamic interaction between their decisions and actions on the one hand and an actively reacting environment on the other hand. Thus, students "discover" the implications both of their actions and of numerous complex variables upon effectiveness. In this way, learning is more meaningful, more lasting, and more relevant than that accomplished solely through conventional classroom instruction.

Experiential training rests upon a rationale which is not often clearly formulated but the fundamentals of which can be identified. Basic to the rationale is the contention that the problem of most instruction is not solely to transmit facts, concepts, or doctrine. In addition, the purpose is to help students to translate knowledge so that it becomes meaningful to them within the contexts of their own life experiences. Thus, experiential training has the fundamental objectives of (1) making a student consciously aware of the implications of his decisions, his actions, and factors within his situation for the outcomes of events and activities in which he participates, and (2) helping the student to become skillful in assessing ongoing situations and acting effectively within them.

It should be apparent that "experiential training" has the same rationale as the "performance based instruction" which has become the foundation of Army education and training in recent years. In fact, experiential training is, in effect, performance based instruction of a complex type. Therefore, when used properly, business games can contribute effectively to performance based training.

The following conditions appear to be necessary if training with games, simulations, and gaming simulations is to be effective:

(1) Opportunity for a student to experience himself functioning in relevant situations. The extent to which a student becomes ego-involved in a learning process is a major determinant of its effectiveness. Learners become involved when problems or

content are interesting, realistic, relevant, and challenging. When properly designed, games produce ego-involvement. However, there is danger of loss of involvement if a game is tedious to play or rules and procedures are too complex. This requires trade-offs between playability of the game and the tendency to enhance face validity with highly realistic but complex models with excessive rules.

(2) Opportunity for a student to experience a variety of realistic and relevant situations. In the real world, situations are constantly changing. The effective individual must be able to identify the unique and essential characteristics of each situation he encounters. Skill in coping with unique situations is best developed when students are exposed to numerous problem situations that are sufficiently different to require a variety of responses and are systematically designed to seriously challenge students in performance areas that are critical for effectiveness in the real world. Accordingly, effectiveness in training requires the opportunity for the student to experience not only realistic and relevant situations but a variety of them as well. Games have the potential of meeting this condition when scenarios are designed so as to present a variety of different and challenging problems or when a variety of experiences occur through spontaneous interaction.

(3) Opportunity for a student to observe the consequences of his actions. Merely experiencing conflict situations, or competition, is not sufficient for genuine learning to occur. Experience must be provided under conditions whereby the student can receive prompt feedback on the results and consequences of his actions. This condition is built into games -- provided the environment is modeled in such a way that it and opposing players will respond realistically to the student's actions. It is important to note that there is evidence that there does not have to be a one-to-one relationship between the game or

simulation model and reality.[1] The more important concern is that the model must evoke realistic responses from players. So long as the simulated system and the players behave realistically, game or simulation parameters can deviate from reality without significant impairment of training or assessment.

(4) Opportunity for objective analysis of own performance. Learning is best when students can consciously test their concepts in action, obtain knowledge of the results, and analyze this information in terms of consequences for future behavior. Accordingly, there must be provision of opportunity for players to study the effects and consequences of their actions by systematic analysis of results. This is probably the most important point in this entire discussion of the use of games in training. Merely playing a game is not enough. Maximum learning occurs only where some systematic analysis of results is conducted either during or after the game, or both. Thus, some sort of instructional component (evaluation and feedback system) should be keyed to training objectives and included as a part of the training module.

Like all instruction, training in which business games are used should be designed to accomplish particular objectives. Such training requires systematically-planned experiences for which the games are specifically selected or designed. Thus, game or simulation models, scenarios, and instructional components (evaluation and feedback procedures) should be designed or selected to accomplish the objectives selected by the trainer.

When properly designed and used thoughtfully and systematically, with full recognition of their advantages and disadvantages, business games can be cost-effective means for accomplishing certain types of instructional objectives. However, they cannot be a panacea for solving difficult instructional problems and they cannot be used most effectively without full recognition of both their potential and their limitations.

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[1] Crawford,Jack, and Twelker, Paul A. "A Design of Instructional Simulation Systems". in Paul A. Twelker (ed.), Instructional Simulation: A Research Development and Dissemination Activity. Monmouth, Oregon: Teaching Research Division, Oregon State System of Higher Education, 1969. (ERIC Document ED 032657).

Use of Games for Personnel Assessment. The use of games, simulations, and gaming simulations for assessing personnel has been, for the most part, limited to assessment centers, where short, relatively simple exercises are the rule. Since such short exercises were excluded from the project, no pertinent published studies were identified. Although the authors are aware of a few instances within business contexts where individuals participating in business games for training were more or less informally assessed, no reports of the systematic use of such games for assessment purposes were found. It appears that games simply are not used for assessment exclusive of assessment centers.

Despite the fact that business games are not often employed for assessment purposes, such use is entirely feasible. Any situation in which individuals are required to display behavior is susceptible to systematic assessment -- if well-designed assessment procedures (instruments, training, and guidance for assessors) are developed specific to the situation. Such procedures for use in military contexts have been developed and evaluated by the senior author and colleagues in several previous studies.[1]

In the survey of games conducted for this project, each game was evaluated for feasibility in both development and assessment. Most proved to be feasible for use in assessment.

Survey of Business Games. During the survey, a total of 351 separate games or simulations were subjected to an initial screening to determine relevance for personnel in jobs similar to those which were the focus of this

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[1] Olmstead, Joseph A., Cleary, Fred K., Lackey, Larry L., and Salter, James A. Development of Leadership Assessment Simulations. Alexandria, Va.: Human Resources Research Organization, Technical Report 73-21, 1973; Lackey, Larry L., and Olmstead, Joseph A. Feasibility of Assessment Methods for Leadership Training. Alexandria, Va.: Human Resources Research Organization, Interim Report to ARI D4-73-19, 1973; Olmstead, Joseph A., and Salter, James A. A Program for Teaching Fundamentals of Personnel Assessment. Alexandria, Va.: Human Resources Research Organization, Interim Report to ARI, May 1974; Olmstead, Joseph A., Lackey, Larry L., and Christensen, Harold E. Research on Utilization of Assessment Results and Methods. Alexandria, Va.: Human Resources Research Organization, Final Report D4-74-18, 1974; Salter, James A., and Olmstead, Joseph A. Research on Assessment Criteria and Counseling Methods. Alexandria, Va.: Human Resources Research Organization, Technical Report 74-25, 1974.

PROCESSES INVOLVED IN BUSINESS GAMES

The 183 games and simulations remaining in the sample after screening were intensively analyzed to identify all possible processes and attributes which could be evoked or assessed through them. The initial analysis resulted in an extensive list containing many similar or redundant items. Duplicate, similar, and redundant items were then combined and the resulting list was analyzed to identify commonalities which would permit efficient categorization of processes and attributes according to a systematic model. The result was a descriptive model of the processes and attributes evoked by business games, with processes categorized according to functions executed by players during participation.

After development of the descriptive model, the sample of games and simulations was reexamined to identify functions that can be served by games in personnel development and assessment. The result was a set of seven functions which were also included in the framework described below.

The Descriptive Model. The model which resulted was designed around the concept of "functions." Included are functions served by players and functions served by games. The model consists of three divisions. The first is comprised of 15 general functions executed by players during participation in business games. Each of the functions is defined by a number of processes involved in its performance. The second division is concerned with personal predispositions and consists of six broad personal attributes which impact upon performance of the processes included in Division I. The third division is comprised of a set of seven functions which can be served by business games in the personnel development process. Included are six functions which contribute to training. The seventh function is assessment.

Thus, the model depicts both the functions executed by players during participation in business games, with associated processes, and the functions served by games in the development and assessment of personnel. In addition, personal attributes which influence player performance of the processes are included. The model was designed to describe in the most complete yet parsimonious fashion the characteristics deemed critical for the classification and evaluation of games.

PROCESS MODEL OF BUSINESS GAMES

I. Functions and Processes Executed by Players.

    A. Directing

        1. Overseeing work of subordinates.
        2. Setting and communicating organizational goals.
        3. Evaluating organizational performance.
        4. Controlling activities of subordinate individuals and units.

    B. Managing (Using Staff Effectively)

        1. Delegating and assigning responsibility to subordinates.
        2. Assigning tasks to units, groups, or individuals.
        3. Defining performance expectations to subordinates.
        4. Establishing effective work climates.
        5. Providing emotional support to subordinates.
        6. Evaluating performance of subordinates.

    C. Decision Making.

        1. Using available information appropriately in making decisions.
        2. Identifying alternative courses of action.
        3. Selecting one from available courses of action.
        4. Selecting and communicating courses of action within appropriate time frames (timeliness of decisions).

    D. Planning.

        1. Identifying short- and long-range requirements.
        2. Determining time requirements for identified tasks.
        3. Establishing priorities, schedules, and time sequences for accomplishing intermediate tasks and long-range objectives.
        4. Developing methods and procedures for implementing decisions and accomplishing objectives.
        5. Communicating plans so as to obtain most effective understanding and commitment.

E. Developing policies and procedures.
   1. Identifying requirements for policies and procedures.
   2. Designing policies and procedures to meet requirements.
   3. Communicating policies and procedures.

F. Organizing.
   1. Determining organizational requirements according to missions, objectives, plans, and assigned tasks.
   2. Assessing organizational resources (personnel, facilities, equipment).
   3. Allocating and assigning organizational resources and tasks.

G. Analyzing Data.
   1. Compiling data.
   2. Examining data.
   3. Interpreting data.

H. Acquiring Information.
   1. Identifying requirements for information.
   2. Detecting availability of information.
   3. Identifying information sources.
   4. Obtaining required information.

I. Information Processing.
   1. Discriminating between relevant and irrelevant information.
   2. Relating discrete items of information.
   3. Organizing information.
   4. Extrapolating or interpreting implications.

J. Problem Analysis.
   1. Defining problem.
   2. Determining scope and implications of problem.
   3. Identifying cause of problem.
   4. Developing problem solution.

K. Interacting with Peers.
   1. Negotiating.
   2. Coordinating.
   3. Informing.
   4. Persuading.

5. Consulting.
6. Representing unit.

L. Interacting with Subordinates.
1. Informing.
2. Instructing.
3. Interviewing.
4. Training.
5. Mediating.
6. Counseling.

M. Interacting with Superiors.
1. Advising.
2. Assisting.
3. Receiving instructions.
4. Representing unit.
5. Recommending.

N. Communicating.
1. Selecting information for transmission.
2. Organizing information for transmission.
3. Identifying appropriate information recipients.
4. Transmitting information and ideas in writing.
5. Understanding written communication.
6. Presenting formal oral communication (briefing, presentations, etc.).
7. Transmitting information and ideas through informal oral communication.
8. Receiving information and ideas through informal oral communication.

O. Participating in Group Situations.
1. Contributing to group decisions.
2. Contributing to group problem solving.
3. Serving as a project team or task force member.

Personal Predispositions:

A. Adaptability.
1. Adjusting to stressful situations.

    2. Functioning in conflict situations.
    3. Altering behavior to meet situational demands.
  B. Behavioral Style.
    1. Displaying self-confidence.
    2. Behaving energetically.
    3. Displaying initiative.
    4. Accepting or assuming responsibility.
  C. Sensitivity.
    1. Displaying consideration for rights and viewpoints of others.
    2. Demonstrating awareness of needs and feelings of others.
  D. Intellectual Competence.
    1. Demonstrating general competence.
    2. Displaying skill in manipulation of abstract concepts.
    3. Demonstrating a grasp of theoretical and/or operational principles.
  E. Motivation.
    1. Displaying work concentration and high work standards.
    2. Demonstrating willingness to work with others.
    3. Demonstrating a concern for task success and a desire to do well.
  F. Tolerance for Ambiguity.
    1. Demonstrating a consistent level of performance in unstructured situations.
    2. Demonstrating a capacity to function in unstructured situations without seeking additional guidance.

III. Functions Served by Business Games in Personnel Development.
  A. Orientation.
  B. Acquisition of Knowledge.
  C. Application of Knowledge.
  D. Application of Principles.
  E. Development of Skills.
  F. Development of Attitudes.
  G. Assessment.

When the model is used, it is possible to delineate for any game, the process functions executed by players, the processes if desired, personal attributes which can be assessed, and the functions served by the game in the development of personnel. With respect to training, the functions and processes listed in Division I are susceptible to development through use of games. It might be possible to effect some change in personal predisposition (Division II) through training; however, the attributes listed in Division II are viewed more as enduring personal qualities not likely to be changed very much by participation in business games.

On the other hand, all of the functions, processes, and personal attributes appearing in Division I and II are susceptible to assessment. For assessment purposes, functions and processes translate to "skills" and all skills and personal qualities that appear in the model can be assessed with properly designed games, assessment procedures, and instruments.

Test of Model. To be usable, the model must be capable of encompassing all of the various processes, attributes, and developmental functions that may be involved in games and simulations of the types surveyed. As a test of the utility of the model, 50 games and simulations were randomly selected from the 183 review sample and the model was applied to each. The objective was to determine whether the processes, attributes, and functions of each game or simulation could be placed meaningfully within one or more of the categories included in the model.

It was found that one simulation of a highly unique nature and only marginal relevance, could not be classified conveniently by the model. This simulation is not really a "business game" but, rather, a loosely-structured, context-free framework to which trainers are supposed to add a context, problems, and activities of their own choosing. Obviously, such a simulation could not be classified according to the model. On the other hand, the model was found to be readily applicable to 49 of the games and simulations in the sample.

An ideal test of the model would have entailed application to an entirely new and independent sample of games, to include a reliability test in which several individuals independently apply the model to evaluate consistency in categorizing the games. However, it was not possible to accomplish these tests and it is recognized that the method used was somewhat of a compromise with an ideal evaluation.

A METHODOLOGY FOR EVALUATION

Task 4 involved development of a methodology for evaluating the utility of games and simulations for development and assessment of junior company grade officers. The method was to be capable of evaluating utility in terms of effectiveness, efficiency, and the processes and parameters depicted in the model described above, as well as providing information concerning the administrative and structural characteristics of the game or simulation under evaluation.

The framework shown in Appendix C was incorporated into the evaluation methodology to provide information concerning administrative and structural characteristics and the model developed in Task 3 served as the basis for evaluating processes and functions. Then, a system for evaluating effectiveness and efficiency was developed.

Effectiveness is the ability of a game or simulation to accomplish the training or assessment purposes of a potential user. With respect to training effectiveness, the purpose is assumed to be achievement of one or more training objectives. For evaluation of training effectiveness, two elements were identified -- relevance (suitability) of the game or simulation for the target population and potential of the game methodology for developing skills in the target population that lead to achievement of specified training objectives. For evaluation of assessment effectiveness, two elements were also identified -- potential for evoking pertinent observable behavior and quality of assessment procedures and instruments, if any.

Efficiency is the effectiveness of a game or simulation in relation to its costs in terms of materials, special equipment, number of instructors required, instructor preparation time, and time to conduct, proportionate to the number of students that can be processed. Thus, efficiency is the ratio of cost to effectiveness.

Since data concerning both effectiveness for training or assessment and such costs as time to conduct, instructor preparation, etc. will not be readily available to evaluators, a system was devised for rating effectiveness and costs on 10 point scales. Use of ratings for both effectiveness and costs made it possible to compute an efficiency ratio. The ratings are described below.

The Methodology. Following is the methodology which is recommended for evaluating the utility of games:

(1) Determine from Table 2 (page 18) of this report the critical tasks or job requirements which should be the focus of training or assessment.

(2) Analyze the game or simulation and record the information required by the evaluation framework in Appendix C. For items 4, 5, 6, 7, 9, and 10 of the framework, evaluate the game or simulation for relevance and applicability in relation to the job requirements identified in (1).

(3) Compute a Training Effectiveness Rating.

   a. Identify the training objectives for the block of instruction to be covered by the game or simulation.

   b. Judge relevance (suitability) of the game for the population to be trained, based on (1) organizational levels to be played by participants, and (2) relevance of the context, problems, and processes evoked by the game for the participant population and their job requirements.

   c. Judge the potential of the game methodology for effectively contributing to achievement of the training objectives identified in (2) above. Include consideration of mode of inputs, eg., oral, written, computer printout; quality of input materials and their potential for evoking desired behavior; provisions for feedback of results of actions (type and promptness); realism of feedback; extent to which high player involvement can be evoked; extent to which game problems are objective-related; amount of trainer control, spontaneous player action, and potential effects of tradeoff between control and spontaneity; workability of game or simulation, the extent to which it will operate according to plan; playability, ease with which players can learn and play the game or simulation; potential face validity for players; and potential of the game or simulation for adaptation if existing effectiveness is not as high as desired.

d. Use the scale shown below to rate Training Effectiveness, taking into consideration both relevance (3)b., and methodology, (3)c. Select any number between 1 and 10 that best fits the judgment of effectiveness.

Low Effectiveness — Moderate Effectiveness — High Effectiveness

1 2 3 4 5 6 7 8 9 10

e. Record the rating as the "Training Effectiveness Rating".

(4) Compute a Cost Rating as follows:

a. From the information recorded in (2) above, identify cost of materials and special equipment, number of instructors required, instructor preparation time, time required to conduct.

b. Consider total estimated costs based on the above factors in relation to number of students to be processed. It may be possible to estimate a per-student cost.

c. Use the scale below to rate Training Costs, taking into consideration total costs in relation to number of students to be processed.

Low Cost — Moderate Cost — High Cost

1 2 3 4 5 6 7 8 9 10

d. Record the rating as "Training Cost Rating."

(5) Compute Training Efficiency as follows:

$$\text{Training Efficiency} = \frac{\text{Training Effectiveness Rating}}{\text{Cost Rating}}$$

(6) Compute an Assessment Effectiveness Rating as follows:

a. Identify the skills (processes) and personal attributes which are to be assessed.

b. Judge the potential of the game or simulation for reliably evoking the processes and attributes to be assessed.

c. Judge the quality of the assessment procedures and instruments associated with the game, if any.

d. Use the scale shown below to rate potential Assessment Effectiveness, taking into consideration both potential for evoking processes and attributes, (5)b., and assessment methodology (6)c.

Low Assessment Effectiveness				Moderate Assessment Effectiveness					High Assessment Effectiveness
1	2	3	4	5	6	7	8	9	10

e. Record the rating as "Assessment Effectiveness Rating".

(7) Compute Assessment Efficiency as follows:

$$\text{Assessment Efficiency} = \frac{\text{Assessment Effectiveness Rating}}{\text{Cost Rating}}$$

The indices for Training or Assessment Efficiency can range from .10 to 10.00. For example, if a game were judged to be highly effective, with a rating of 10, and costs were judged to be moderate, with a rating of 5, the Training Efficiency index would be 2.00. On the other hand, if costs for another equally effective game were so high as to receive a Cost Rating of 10, the efficiency index would be 1. Thus, even though effectiveness for both games were equally high, sizable costs would make the second game less efficient. A less effective game with a rating of 6 but with lower costs rated at 6 would also receive an efficiency index of 1.00. Both games would be equally efficient, even though one was much more effective.

Where such comparisons are made, training managers must decide where a less efficient, ie., more costly, but more effective game is desirable. The evaluation scheme described above permits such decisions to be better informed.

Test of the Methodology. The methodology described above was applied to the sample of 183 games remaining after initial screening. Each game was evaluated in terms of relevance for junior officers in administrative, nontactical support, and staff jobs and of the methodology described above.

The fundamental question to be answered was "is the game or simulation suitable for use with junior company officers or can it be adapted to be suitable?"

It was found that the methodology provides the information needed for such judgments. Fifty-two games or simulations were identified as suitable. One hundred and thirty-one were judged not suitable. Descriptive and evaluative information on the 52 games which were identified as suitable are presented in A Catalogue of Business Games for Use in Developing and Assessing Junior Company Grade Officers, a separate research product of this project.

A FRAMEWORK FOR DEVELOPMENT OF GAMES AND SIMULATIONS

Task 5 was devoted to development of a recommended framework for construction of games and simulations. The literature reviewed in Task 2 and previous experience of the research staff were the foundations for development of a framework to guide construction of games and simulations suitable for junior company-grade officers in administrative, nontactical support, and staff positions.

The recommended framework appears in Appendix F. Because the framework must be applicable for a wide variety of instructional contexts, job requirements, and both training and assessment purposes, the guidance that is provided must be, of necessity, somewhat general in nature. However, within these constraints, it was attempted to provide as much detail as possible concerning recommended procedures for developing valid and technically sound games and simulations.

CONCLUSIONS

The purpose of the project described in this report was to review and develop research information which will aid in construction of and experimentation with developmental gaming exercises simulating the interpersonal relationships and decision-making and problem-solving processes of junior company-grade officers working in administrative, nontactical support, and staff jobs. In short, the purpose was to provide a foundation for future research on the efficacy of games and simulations for use in training and assessing officers for duty in the above-described jobs. The products of this project will provide such a foundation.

A reasonable degree of confidence can be placed in the job requirements identified for officers in the target jobs. Although a larger sample of job incumbents would have been desirable, the methodology used (initial identification of job requirements by resource personnel, with confirmation by job incumbents) permits confidence that the identified tasks can be taken as representative of job requirements in interpersonal, problem analysis, and decision making performance areas.

The methodology for evaluating games and simulations is a feasible means for selecting exercises to be used in further research. Of course, the efficacy of any exercise so selected should be verified by thorough examination and empirical evaluation. Furthermore, reliability of the evaluation methodology should be verified. Although small-scale, informal examinations of reliability were conducted during the project, constraints did not permit a full-fledged reliability study. Accordingly, such a study should be conducted. However, because of the nature of the judgments required of evaluators who use the methodology, participants in a reliability study should be familiar with experiential training concepts; knowledgeable about games, simulations, and their uses; and trained in use of the evaluation system. The methodology assumes knowledgeable evaluators and respectable reliability will only be obtained if such requirements are met.

The catalogue which is a separate research product of this project contains descriptions and evaluations of 52 games and simulations. This figure is small in comparison with the large number of business and management games known to exist. However, the small number appearing in the catalogue should not be surprising if it is recognized that most business and management games are fairly specific in terms of contexts, activities, and organizational levels that are depicted and, accordingly, usually require some background knowledge or experience, eg., in business, accounting, marketing, etc., in order for participants to function in them. The very fact of the specificity of most games restricts their relevance for junior company-grade Army officers. Although it was possible to identify 52 games that are suitable in some degree for use with such officers, it is the view of the authors that maximum effectiveness for either training or assessment can be achieved only through construction of exercises which are specifically designed for use with target officer populations or adaptation of the games appearing in the catalogue to a military context and junior officer functions.

The framework for constructing games and simulations (Appendix F) incorporates the best elements of gaming and simulation design, instructional systems development procedures, personnel assessment practices, and principles of sound evaluation. Of particular importance, the framework places as much emphasis upon the necessity for developing and implementing sound instructional or assessment components as upon the gaming component. This emphasis is something of an innovation for training games and simulations. Whereas there has been solid recognition of the necessity for psychometrically sound assessment components, there has been surprisingly little attention given to the need for making systematic instructional procedures integral parts of gaming simulation systems. This has been particularly characteristic of military training where games are often used without fitting them into the programs of instruction in any meaningful way. The framework developed for this project attempts to overcome these deficiencies by requiring the design of instructional components that are specifically tailored to the games or simulations that are used and are also supportive of the training concepts envisioned by relevant programs of instruction.

The review of the gaming literature described in the report leads to the conclusion that future research concerned with training effectiveness should be directed toward determining the capability of games and simulations for providing support to other types of instruction. Because games and simulations are effective only for reinforcing knowledge and developing skills, they can rarely carry the weight of instruction alone. They should be most useful when employed in association with other methods of instruction. For this reason, it appears that comparative studies of games, without reference to the instruction which they support, would not be productive. On the other hand, evaluative studies are needed of the extent to which well-designed games or simulations, with sound instructional components, can improve the effectiveness of conventional instruction or can develop skills to a greater degree than other methods. Finally, there is a need for studies of ways in which games or simulations can best supplement other less-expensive modes of instruction. Serious cost-effectiveness studies are needed to determine whether attributable gains in skills are sufficient to warrant the costs involved in development and administration of games and simulations.

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APPENDIX A

Interview Guide

INTERVIEW GUIDE

I represent the Human Resources Research Organization, or "HumRRO". We are conducting research under contract to The Army Research Institute. We are studying the duties of officers in administrative and staff jobs in order to learn about the kinds of knowledge and skills required to perform the jobs effectively. This information will be used to improve training for officers entering these jobs.

I am going to ask you a number of questions about your job and then I will request you to complete a questionnaire about some tasks and duties you may perform. All of this information will be combined with that given by other officers so that we can obtain an overall impression of the requirements of these types of jobs. Your responses will not be separately identified and only the research staff will see your responses.

None of the questions are of a sensitive nature. However, you are not required to answer them if you do not desire to do so. Your cooperation will assist the army to improve its training for jobs like yours.

Do you have any questions?

1. What is your present job?

2. a. What are the principal duties in your job?

   b. Are there any other important duties that you havn't mentioned?

3. What types of problems do you have to handle in your job?

4. a. What percent of the problems you handle are mainly technical in nature?

   b. Please give me an example.

5. a. What percent of the problems you handle are mainly administrative-nontechnical, that is, require knowledge of administrative procedures but require no special technical knowledge specific to your branch?

   b. Please give me an example.

6. a. What percent are mainly human problems, that is including working with other people?

   b. What kinds of people, that is, subordinates? superiors? officers of equal rank in other departments or units? or "the public" (military or civilian personnel with whom you must come in contact in the performance of your job?

   c. Please give me examples.

7. a. On a scale of one to ten, how would you rate the difficulty of the problems you normally encounter?

   b. Why?

8. a. In every job, people have to make some sorts of decisions. The decisions may range from routine choices based solely on regulations or detailed guidance to very complex decisions based only on broad policies. Many decisions fall somewhere in between. How would you describe the types of decisions you normally make in your job?

   b. Why?

9. What are the three most important skills an officer needs to be successful in your job?

10. What kinds of training would be most helpful for preparing officers to perform your job?

11. a. Was the training you received prior to assuming your job adequate to equip you to perform effectively in all areas of your duties?

    b. If "No", why was the training not adequate?

Now, here is a questionnaire which is to be completed by you.

Full instructions are on the questionnaire; however, if you have any questions as you proceed, please feel free to ask them.

APPENDIX B

Job Task Inventory

JOB TASK INVENTORY

ADMINISTRATIVE, NONTACTICAL SUPPORT, STAFF OFFICERS

A. Present Branch ______________________________

B. Present duty assignment ______________________________

____

HUMAN RESOURCES RESEARCH ORGANIZATION (HUMRRO)
SUITE 23, 2601 CROSS COUNTRY PLAZA
COLUMBUS, GEORGIA 31906

JOB TASK INVENTORY QUESTIONNAIRE

INSTRUCTIONS

A. General Directions

(1) You are going to be asked to describe your present job in terms of certain tasks that are frequently performed by officers in your grade and technical speciality. Do not report tasks performed by subordinates, peers, or supervisors working with you unless you also do the tasks as part of your regular job. If you take over additional tasks for a few days while someone is away, you do not report this work.

(2) Tasks that are not part of your present job will be omitted, no matter how often you did it in the past.

(3) In describing your present job, go back as far in time as necessary to get a true picture. You will probably need to go back not more than 6 months.

If you have any questions about what is meant by your present, regular job, and the period of time you should recall in describing this job, ask your questionnaire administrator.

B. Directions for Rating Scale

On the following pages are descriptions of a number of tasks that may be a part of your job. Read each task and, as you read, decide if your job normally requires you to perform that particular task, at least to some extent. If it does not, make no mark on your booklet for that item, i.e., leave the item blank, and go on to the next task. If the task is a part of your job, fill in Column A using the rating scale below.

Use the rating scale for Column A to select the numeral between 1 and 10 that best describes the extent to which that task is a significant part of your job, in terms of importance and/or time spent.

RATING SCALE

Insignificant part of my job			Moderately Significant					Highly Significant part of my job	
1	2	3	4	5	6	7	8	9	10

NOTE:
It is important to the objective of this study that you respond only to tasks that are a part of your job and that you respond to all of the tasks that are a part of your job.

Read each Task carefully

(1) Decide whether or not you perform the task.

(2) For each task that you perform, rate its significance as a part of your total job duties.

RATING SCALE

Insignificant part of my job — Moderately Significant — Highly Significant Part of my job

1 2 3 4 5 6 7 8 9 10

TASKS — **COLUMN A RATINGS**

1. Interview and select subordinates ____________
2. Brief superiors ____________
3. Make recommendations to superiors ____________
4. See that work of unit gets done efficiently and effectively ____________
5. Prepare budgets ____________
6. Implement policies ____________
7. Write letters and reports ____________
8. Brief on results of finished work ____________
9. Maintain records ____________
10. Comply with orders and directives ____________
11. Determine requirements and obtain supplies and equipment for unit ____________
12. Make progress reports to superiors ____________
13. Organize/provide information for superior ____________
14. Procure supplies ____________
15. Maintain inventory records ____________
16. Define subordinates responsibilities ____________
17. Evaluate performance of subordinates ____________
18. Advise subordinates on ways to handle work problems ____________
19. Check on progress of work of subordinates ____________

RATING SCALE

Insignificant part of my job	Moderately Significant	Highly Significant Part of my job

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 — 10

TASKS	COLUMN A RATINGS
20. Check accuracy of work of subordinates	______
21. Assist subordinates in their work	______
22. Give orders and instructions about work	______
23. Review work of subordinates	______
24. Set performance objectives for subordinates	______
25. Set performance standards for subordinates	______
26. Review subordinates qualifications and make work assignments	______
27. Critique subordinates' performance	______
28. Counsel subordinate on human relations	______
29. Counsel subordinate who has problem	______
30. Conduct formal performance evaluation of subordinates	______
31. Motivate subordinates	______
32. Counsel subordinates on ways their performance can be improved	______
33. Plan best use of available facilities	______
34. Plan own work	______
35. Plan work of unit	______
36. Plan work of subordinates	______
37. Formulate policies	______
38. Set performance goals and standards for unit	______
39. Estimate time/costs/manpower to accomplish planned tasks	______

RATING SCALE

Insignificant part of my job	Moderately Significant	Highly Significant Part of my job

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 — 10

TASKS **COLUMN A RATINGS**

40. Hold group planning sessions with subordinates ____________

41. Participate in group planning sessions with supervisors and peers ____________

42. Project manpower requirements ____________

43. Solve routine technical problems ____________

44. Solve complex technical problems ____________

45. Plan training for subordinates ____________

46. Conduct formal training programs for military subordinates ____________

47. Conduct formal training programs for civilian subordinates ____________

48. Conduct or supervise on-the-job training for military subordinates ____________

49. Conduct or supervise on-the-job training for civilian subordinates ____________

50. Develop teamwork within unit ____________

51. Participate in joint decision-making with superiors ____________

52. Participate in joint decision-making with peers ____________

53. Participate in joint decision-making with subordinates ____________

54. Identify alternative courses of action ____________

55. Decide on best course of action from among alternatives ____________

56. Make routine technical decisions according to procedure or regulation ____________

RATING SCALE

Insignificant part of my job	Moderately Significant	Highly Significant Part of my job

1 2 3 4 5 6 7 8 9 10

TASKS	COLUMN A RATINGS
57. Make complex technical decisions	________
58. Communicate and interpret policy to subordinates	________
59. Provide information to superiors	________
60. Provide information to people outside of unit	________
61. Obtain information from people outside of unit	________
62. Participate in meetings and conferences with representatives of other units	________
63. Participate in meetings and conferences as subordinate of larger unit	________
64. Brief subordinates on job performance requirements	________
65. Exchange information and ideas with subordinates	________
66. Mediate disputes or tensions between subordinates	________
67. Coordinate with other units	________
68. Keep subordinates informed about current situation	________
69. Collect technical information or data	________
70. Check accuracy of facts, data, or information	________
71. Troubleshoot special problems as they arise	________
72. Analyze technical data	________
73. Keep informed on developments in technical speciality	________

RATING SCALE

Insignificant part of my job	Moderately Significant	Highly Significan Part of my job

1 2 3 4 5 6 7 8 9 10

TASKS	COLUMN A RATINGS
74. Provide technical know-how for work of unit	________
75. Analyze technical problems	________
76. Apply technical knowledge to solution of work problem	________
77. Execute routine (nondecision) procedures in your technical speciality	________
78. Organize work of unit	________
79. Organize logical priorities for work	________
80. Schedule work for unit	________
81. Establish work procedures	________
82. Organize resources for task accomplishment	________
83. Identify operational problems	________
84. Prepare and maintain work flow charts and graphs	________
85. Exercise quality control over work of unit	________
86. Enforce procedures and regulations	________
87. Check on progress of work of unit	________
88. Review decisions and actions of subordinates	________
89. Check on adherence to unit work schedules	________
90. Inspect work upon its completion by subordinates	________

APPENDIX C

Framework for Describing Games and Simulations

TITLE:

1. TYPE: (Whether manual or computer assisted; whether game, simulation, gaming simulation, or other; whether media- or interpersonal-ascendant).
2. CONTEXT: (Type of environment depicted in game, eg., business, military, civilian government, etc.).
3. STATED PURPOSE: (Purpose of the game as stated by its designers).
4. POTENTIAL USE: (Training, assessment, or both).
5. POTENTIAL FUNCTIONS: (Training and assessment functions served by the game; see model).
6. PROCESS TRAINING POTENTIAL: (Processes, and functions, for which personnel could be trained by the game; see model).
7. PREREQUISITES: (Knowledge, skill, or experience requirements necessary for meaningful participation by players).
8. DESCRIPTION: (Summary of the game; its essential elements, structural characteristics, player activities, etc.).
9. STUDENT OBJECTIVES: (What students are trying to achieve in their player-roles during the game).
10. DECISIONS MADE BY STUDENTS: (Types of decisions that students must make during play).
11. EXERCISE DATA AND REQUIREMENTS:

    NUMBER PLAYERS: (Number of individuals, and teams if applicable, accomodated simultaneously).

    NUMBER ADMINISTRATORS: (Number of trainers, controllers, and observers required to conduct game).

    PLAYING TIME: (Total lapsed time required to complete the game).

    INSTRUCTOR PREPARATION: (Time required for an instructor to prepare to conduct the game).

    STUDENT PREPARATION: (Time required, if any, for advance student preparation).

    COMPONENTS: (List of the items and materials needed to play the game).

    SPECIAL EQUIPMENT: (Unusual or expensive equipment, eg. computer, required).

    COST: (Cost of game materials, permission to use, etc.).

    SOURCE: (Name and address of individual, firm, or organization from which materials and information about the game may be obtained).

    AUTHOR: (Name of individual(s) who designed the game).
12. NOTES: (Include any additional information or comments that would be useful).
13. REFERENCES: (List any publications, articles, etc. which describe or present evaluative information about the game).

APPENDIX D

Positions Occupied by Members of Job Incumbent Sample

Positions Occupied by Members of Job Incumbent Sample

Assistant Brigade S-4, Infantry Brigade
Tasking and Requirements Officer, Infantry Brigade
Assistant Post Food Advisor
Assistant Chief of Personnel Section, U.S. Army Infantry Center
Cash Control Officer, U.S. Army Infantry Center
Chief of Finance Services, U.S. Army Infantry Center
Chief, Quality Assurance, Finance and Accounting Office, U.S. Army Infantry Center
Chief, Military Pay Section, U.S. Army Infantry Center
Executive Officer, Detachment Company
Chief, Financial Services, Military Pay Section, U.S. Army Infantry Center
Chief, Redeployment Section, Enlisted Personnel Management Section, U.S. Army Infantry Center
AG Executive Officer, Infantry Brigade
Assistant Brigade Supply Officer, Infantry Brigade
POL Platoon Leader and Company Executive Officer
Assistant Budget Officer, U.S. Army Infantry Center
Administrative Officer, Directorate of Evaluation, U.S. Army Infantry School
Assistant Personnel Management Officer, U.S. Army Infantry School
Assistant Personnel Management Officer, U.S. Army Infantry Center
Chief, Enlisted Records, U.S. Army Infantry Center

APPENDIX E

Sample of Business and Management Games

Games and Simulations in Review Sample

1. The "A" Game. Hector R. Anton, School of Business Administration, University of California, Berkeley, California.

2. The A. B. C. Management Exercise Game. A. A. Robichek, Management Development Institute, P. O. Box 1059, 1001 Lousanne, Lousanne, Switzerland.

3. The Action Corporation. Andrew McCash, Graduate School of Business, University of Michigan, Ann Arbor, Michigan.

* 4. Administration. Education Research, P. O. Box 4205, Warren, New Jersey, 07060.

5. A.M.A. General Management Business Simulation (The Morse Company). American Management Association, 135 West 50th Street, New York, New York 10020.

* 6. Appraisal by Objective (Coaching and Appraising). Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

7. The Arizona Business Game. College of Business and Public Administration, University of Arizona.

8. Artificial Society. Lee O. Thayer, Bert Segler and James H. Campbell, College of Business Administration and Industry, Wichita State University, Wichita, Kansas.

* 9. Assigning Work. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016

10. Assignment Game. John Wiley and Sons, Inc., 605 Third Avenue, New York, New York 10016

* 11. Automation. Abt Associates, Inc., Boston, Mass.

12. The Blindfold Game. Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

13. Blue Wodjet Company. Jay Reese, 3235 West 17th Avenue, Eugene, Oregon 97402.

14. Boston College Decision-Making Exercise. Program Information Department, Program Distribution Center, International Business Machines Corp., 40 Saw Mill Road, Hawthorne, New York.

* Indicates games judged to be appropriate for junior company-grade officers and included in the catalogue.

* 15. The Bridge Game (Part of Supervisory Skill Series). Training Develop-Center, Two Pennsylvania Plaza, New York, New York 10001 and Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

* 16. Buddies. Abt Associates, Inc., Boston, Mass.

17. Business Game III, Executive Decision-Making. Rohr Aircraft Corp., Chula Vista, California.

18. Business Logistics Decision Simulation (Buloga). University of Minnesota, Graduate School of Business Administration, Minneapolis, Minnesota.

19. Business Logistics Facility Simulation. J. L. Heskett, Logistics Systems, Inc., 10 Arrow Street, Cambridge, Mass.

20. Business Management Game. Harvard Business Review, Readers Service Department, Boston, Mass.

21. The Business Management Laboratory. Ronald L. Jensen, Graduate School of Business Administration, Emory University, Atlanta, Georgia.

22. Business Management Simulation. Douglas Corp., Missile and Space Division, Space Systems Center, 5301 Balusa Ave., Huntington, California.

23. The Business Policy Game. Appleton-Century-Crofts, 440 Park Ave. South, New York, New York 10016

/ 24. Business Simulation. Westinghouse Information Systems Laboratory, 770 Lucerne Drive, Sunnyvale, California 94066.

25. Buying Game. J. G. F. Wollaston, Greaterman Stores Limited, P. O. Box 5460, Johannesburg, South Africa.

26. BUX. Western Behavioral Sciences Institute, La Jolla, California.

* 27. CADISIM (Computer Assisted Disposal Simulation). Commandant, U. S. Army Logistics Management Center, Fort Lee, Va.

28. A Computer-Oriented Game Simulating the Combined Production Scheduling-Inventory Control Activity. John V. Sodem, North Carolina State University, Raleigh, North Carolina.

* 29. CAISIM (Computer Assisted Industrial Simulation). Commandant, U. S. Army Logistics Management Center, Fort Lee, Va.

* 30. CALOGSIM (Computer Assisted Logistics Simulation). Commandant, U. S. Army Logistics Management Center, Fort Lee, Va.

31. CAMSIM (Computer Assisted Maintenance Simulation). Commandant, U. S. Army Logistics Management Center, Fort Lee, Va.

32. CAPERTSIM (Decision Simulation Program). Commandant, U. S. Army Logistics Management Center, Fort Lee, Va.

33. Capital Budgeting Simulation. Abt Associates, Inc., 55 Wheeler Street, Cambridge, Mass.

34. CARACESIM (Computer Assisted Resource Allocation for Cost Effectiveness Simulation). School of Management Information Systems, Fort Lee, Va.

35. CARESIM (Computer Assisted Repair Simulation). Commandant, U. S. Army Logistics Management Center, Fort Lee, Va.

36. CARMSIM (Computer Assisted Reliability Maintainability Simulation). Commandant, U. S. Army Logistics Management Center, Fort Lee, Va.

37. Carnegie Tech Management Game. Graduate School of Indistrial Administration, Carnegie-Mellon University, Pittsburgh, Pennsylvania 15213.

* 38. Communicating For Results. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

* 39. Communication. Educational Research, P. O. Box 4205, Warren, New Jersey, 07060.

40. Communications: Problems and Opportunities. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

41. Compuman. Jay A. Craven, University of Miami, Coral Gables, Florida.

42. Computerized Management. Computer Games, Inc., P. O. Box 544, Chicago Heights, Ill. 60411.

43. Computer Problem Kit for Economics. The MacMillan Company, New York, New York.

44. Conducting Planning Exercises. Instructional Development Corporation, P. O. Box 805, Salem, Oregon 97308.

* 45. Conglomerate. Development Dimensions, Inc., 767 Colony Circle, Pittsburgh, Pa. 15243.

46. The Conopoly Industry. Robert C. Meier, University of Washington, Seattle, Washington.

* 47. Constructive Discipline. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

* 48. Con-Tac-Tix. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

* 49. The Cork Balls Game (Part of Supervisory Skills Series). Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

* 50. Decision. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

51. Decision Making. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

52. Decision Making Exercise. John E. Van Tassell, Decision Associates, P. O. Box 392, Westwood, Mass. 02090.

* 53. Delegation. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

54. Dispatch-O-Game. General Electric Company, 7735 Old Georgetown Road, Bethesda, Maryland.

55. Duquesne University Management Game. J. J. Miller and B. Meyer, Duquesne University, Pittsburgh, Pennsylvania.

56. Dynamic Management Education (Series). Addison-Wesley Publishing Company, Reading, Mass.

57. Equipment Evaluation. Science Research Associates, Inc., 259 Erie St., Chicago, Ill. 60611 or Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

58. ...el alia. Department of Transportation and Environmental Planning, University of Birmingham, P. O. Box 363, Birmingham, B15 2TT, England.

59. Executive Action Simulation. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

60. Executive Decision Making Through Simulation. Charles E. Merrill Publishing Company, 1300 Alum Creek Drive., Columbus, Ohio 43216.

61. The Executive Game. Richard D. Irwin, Inc., Homewood, Illinois.

62. Executive Simulation Game. W. D. Heier, Management Department, College of Business Administration, Arizona State University, Tempe, Arizona 85281.

63. Exercise Attitudes. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

64. Exercise Communication. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

65. Exercise Compensation. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

66. Exercise Evaluation. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

67. Exercise Fishbowl. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

68. Exercise Kolomon. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

69. Exercise Negotiations. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

70. Exercise Objectives. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

71. Exercise Organization. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

72. Exercise Supervise. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

73. Factory. Carnegie-Mellon University, Graduate School of Industrial Administration, Pittsburgh, Pennsylvania 15213.

74. Family. Family Pastimes, R. R. 4, Perth, Ontario.

75. Free Enterprise Game. Board of Cooperative Educational Services, 845 Fox Meadow Road, Yorktown Heights, New York 10598.

76. The Gaming Company. D. Clay Whybark, Krannert School, Purdue University, Lafayette, Indiana.

77. General Electric Game (I). ISD, General Electric, 7735 Old Georgetown Road, Bethesda, Maryland.

78. General Electric Game (III). ISD, General Electric, 7735 Old Georgetown Road, Bethesda, Maryland.

79. General Electric Game (IV). ISD, General Electric, 7735 Old Georgetown Road, Bethesda, Maryland.

80. Graphigames. Education Ventures, Inc., 209 Court Street, Middleton, Conn. 06457.

* 81. Grievance Handling (Non-Industrial). Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

* 82. Handling Conflict in Management I. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016 or American Management Association, Inc.

* 83. Handling Conflicts in Management II. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

84. Handling Conflict in Management III. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

85. Human Relations. Austin Writers Group, P. O. Box 12642, Capital Station, Austin, Texas 78711

86. The Imaginit Management Game. Ralph F. Barton, Department of Management, Texas Technological College, Lubbock, Texas.

87. The In-Basket Kit. Addison-Wesley Publishing Company, Reading, Mass.

88. Industrial Expansion-Urbanalysis. Arthur M. Freedman, Bellefontaine Psychological Institute, 2211 Bellefontaine, Houston, Texas 77025.

89. The Information Game. Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

* 90. Instruction. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

91. Integrated Simulation. South-Western Publishing Company, 5101 Madison Road, Cincinnati, Ohio 45227.

* 92. Interaction. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

93. Interviewing. Science Research Associates, Inc., 259 East Erie Street, Chicago, Illinois 60611.

94. INVENTROL. General Electric Company, 7735 Old Georgetown Road, Bethesda, Maryland.

95. The Investment Game. Richard D. Irwin, Inc., 1818 Ridge Road, Homewood, Illinois 60430.

96. Jabberwocky. John E. Washburn, P. O. Box 6855, Santa Rosa, Calif. 95406.

97. Joblot. The Macmillan Company, 866 Third Avenue, New York, New York 10022.

98. The John and George Interview. Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

* 99. Leadership. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

* 100. Leading Groups to Better Decisions. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

101. Lester Hill Office Simulation. McGraw-Hill Book Company, 330 West 42nd Street, New York, New York 10036.

102. The Listening Game. Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

103. Long Range Planning. Didactic Systems, Inc., 6 N. Union Avenue, Cranford, New Jersey 07016.

* 104. The Lumber Yard Game (Part of Supervisory Skills Series). Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

105. Lunar Rendezvous. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

106. The Maintenance Game. Journal of Industrial Engineering, Vol. XV, No. 1, Jan-Feb 1964, pp 30-36.

107. Maintenance Management Game. Allied Chemical Corp., New York, New York.

108. Man Power Game. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016

* 109. Management by Objectives. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

110. Management Decision Simulation. McGraw-Hill Book Co., Inc., 330 West 42nd Street, New York, New York 10036.

111. Management Decision Simulation (Computer Version). Stanley Vance, School of Business Administration, University of Oregon, Eugene, Oregon 97403.

* 112. Management Exercises. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 113. Management for Supervisors. Didactic Systems, Inc., 6 North Union Ave., Cranford, New Jersey 07016.

114. The Management Game. McMillan Company, 866 Third Avenue, New York, New York 10022.

* 115. Management of the Physical Distribution Function. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

116. Management Simulation and Seminar. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

117. Managing the Quality Control Function. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 118. Managing the Worker. McMillan Company, 866 Third Avenue, New York, New York 10023.

* 119. Managing Through Face-to-Face Communication. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

120. Mansym. Management Development Incorporated, 148 E. Lancaster Ave., Wayne, Pennsylvania 19087.

121. Mantrap. University of Houston, Center for Research in Business and Economics, Houston, Texas.

122. Manufacturing Management Simulator. Simulated Environments, Inc., University City Science Center, 3401 Market Street, Philadelphia, Pennsylvania 19301.

123. The Marman Management Game. Department of Statistics and Operations Research, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia, Pennsylvania.

124. MSU Management Game. Michigan State University, East Lansing, Michigan.

125. Materials Inventory Management Game. Didactic Systems, Inc., 6 North Union, Cranford, New Jersey 07016.

126. Midtex. College of Business Administration, University of Texas, Austin, Texas 78712.

* 127 Monopologs. The Rand Corporation, 1700 Main Street, Santa Monica, California 90406.

* 128. Motivation. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

* 129. The Nesting Boxes Game (Part of Supervisory Skills Series). Training Development Center, Two Pennsylvania Plaza, New York, N. Y. 10001.

* 130. Office Management. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

131. Oklahoma Business Management Game. Oklahoma State University, Stillwater, Oklahoma.

132. Operation Suburbia. Dynamic Management Education, 120 Bell Street, Seattle, Washington.

* 133. Optimum Delegation. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

134. O.Q.O. Oracle-Quest-Order. Instructional Simulations, Inc., 2147 University Avenue, St. Paul, Minn. 55114.

* 135. The Performance Game (Part of Supervisory Skills Series). Training Development Center, Two Pennsylvania Plaza, New York, New York 10001 or Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

136. Personnel Assignment Game. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 137. The Personnel Department. The MacMillan Company, 866 Third Avenue, New York, New York 10022.

138. Personnel Interviewing. Science Research Associates, Inc., 259 East Erie Street, Chicago, Illinois 60611.

139. PERTSIM: Text and Simulation. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 140. Physical Distribution Management. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 141. Planned Maintenance. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 142. Planning. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

143. Policy. Digital Equipment Corporation, 146 Main Street, Maynard, Mass. 01754.

144. Polytaire. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 145. Priority. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

146. Problems in Supervision. Addison-Wesley Publishing Co., Inc., Reading, Mass. 08167.

147. The Problem Solving Game. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 148. Production Control Inventory. Science Research Associates, Inc., 259 East Erie Street, Chicago, Illinois 60611 or Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

149. Production Control Scheduling. Science Research Associates, Inc. 259 East Erie Street, Chicago, Illinois 60611.

150. Production Scheduling Management Game. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

151. Production Simulation Project. Faculty of Business, University of Alberta, Edmanton, Alberta, Canada.

* 152. Profair. Transnational Programs Corporation, 54 Main Street, Scottsville, New York 14546.

153. Prosim: A Production Management Simulation. INTEX Educational Publishers, Scranton, Pennsylvania 18515.

154. Prospects. Transnational Programs Corporation, 54 Main Street, Scottsville, New York 14546.

* 155. Prosper. Transnational Programs Corporation, 54 Main Street, Scottsville, New York 14546.

156. Purchasing. Science Research Associates, Inc., 259 East Erie Street, Chicago, Illinois 60611.

157. Quality Control Management. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

158. Reorganization. The MacMillan Company, 866 Third Avenue, New York, New York 10022.

159. Scheduling. Science Research Associates, Inc., 259 East Erie Street, Chicago, Illinois 60611.

160. Scheduling Game. Proctor & Gamble Company, Management Systems Division, Winton Hill Technical Center, Cincinnati, Ohio.

* 161. Selecting Effective People. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 162. Selection. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

* 163. Sensitivity. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

164. Small Business Executive Decision Simulation. Small Business Administration, Washington, D. C. 20025.

165. SMART (Systems Managers Administrative Rating Test). Richard D. Irwin, Inc., 1818 Ridge Road, Homewood, Illinois.

166. Stanford Business Logistics Game. Prof. Karl M. Ruppenthal, Faculty of Commerce, University of British Columbia, Vancouver, Canada.

* 167. The Sticks 'N Stones Game (Part of Supervisory Skills Series). Training Development Center, Two Pennsylvania Plaza, New York, New York 10001 or Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

168. Supergame (Supervisers Training Game). Personnel Department, Bank of California, 400 California Street, San Francisco, California 94120.

* 169. Supervision. Education Research, P. O. Box 4205, Warren, New Jersey 07060.

* 170. Supervisory Skills. Didactic Systems, Inc., 6 North Union Avenue, Cranford, New Jersey 07016.

* 171. Supply and Demand Game. Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

172. System I. Instructional Simulations, Inc., 2147 University Avenue, St. Paul, Minnesota, 55114.

173. Tool Room Game. Booz, Allen & Hamilton, 135 South LaSalle Street, Chicago, Illinois 60603.

174. The Top Man Game. University of Washington, School of Business, Dept. of Management and Organization, Seattle, Washington 98105.

175. Top Management Decision Game. Hewett-Packard Software Center, Data Products Group, 11000 Wolfe Road, Cupertino, California 95014.

176. Top Management Simulation. Small Business Administration, Washington D. C. 20025.

177. Top Operating Management Game. McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York, New York 10036.

178. ULCERS. House of Games Corp., Ltd., 3135 Universal Drive, Mississauga, Ontario, Canada.

179. Unitex. College of Business Administration, University of Texas, Austin, Texas 78712.

180. UPPOE (University of Pittsburgh Organization Exercise). Instad Ltd., Midtown Plaza Station, Rochester, New York 14604.

181. Washington University Business Game. Graduate School of Business Administration, Washington University, Box 1133, St. Louis, Missouri 63130.

182. The Wood Blocks Game. Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

183. The Writing Game. Training Development Center, Two Pennsylvania Plaza, New York, New York 10001.

APPENDIX F

A Framework for Development of Management Games for Training and Assessment

A FRAMEWORK FOR DEVELOPMENT OF MANAGEMENT GAMES FOR TRAINING AND ASSESSMENT

The purpose of this document is to provide guidance for the construction of management games and simulations to be used for training or assessing military personnel. Such games and simulations can be used either for enhancing skills and some knowledges in certain areas of performance or for assessing existing skills and personal attributes relevant to the contexts and purposes depicted. However, they can be effective only when carefully and systematically selected, adapted, or designed to accomplish desired objectives. This document outlines a framework for such systematic development.

The world of gaming and simulation has developed a rather specialized terminology which has implications for design efforts. Of special interest here is the distinction between "games," "simulations," and "gaming simulations." According to current terminology, a "game" must involve competition and have rules for determining a winner and a loser. However, a game does not necessarily possess the property of portraying, to any degree, the real world. In contrast, the principal property of a "simulation" is a deliberate physical, procedural, or symbolic representation of a real-world system. Although simulations may model real-world systems at widely different levels of abstraction, the only necessary property is a model of some sort. Competition is not a necessary property of a simulation. Thus, not all games model the real world and not all simulations possess the property of competition. However, by far the greater number of training and assessment vehicles possess the essential properties of both modeling and competition. To preserve the distinctions just described, these last vehicles have come to be properly labeled "gaming simulations." In gaming simulations, the vehicle models, to some degree however slight, the real world and it also involves competition with rules for deciding winners and losers.

Most so-called "business" or "management" "games" are actually gaming simulations; however, many are also pure simulations and a few are solely games. All may be useful, depending upon the purposes and objectives of designers.

For convenience in this document, the framework for development and all remaining discussion will address only gaming simulations. These vehicles are the most complex and their development includes all of the essential elements for construction of both games and simulations. It should be a simple matter for anyone interested only in the development of either games or simulations to extract from the following discussion those elements which will be appropriate.

Requirements for Training and Assessment. Certain important distinctions between requirements for training and those for assessment should be made before description of the developmental framework. The distinctions are essential; yet, they are frequently overlooked. They are fundamental to the approach discussed in later sections of this document.

The function of a gaming simulation used for training is to present a situation -- a set of stimulus conditions -- which require individuals to perform, solve problems, etc., in order to achieve some goal or purpose. Through practice and experimentation, players try new behaviors and obtain, in some manner, information concerning the effectiveness or ineffectiveness of the behaviors. Through conventional learning principles -- positive or negative reinforcement, knowledge of results, etc. -- skills are developed or enhanced.

For training, the key to effective learning is knowledge of results. When gaming simulations are used, this becomes especially important. Systematic evaluation, feedback, and critique of performance is an essential requirement if genuine learning is to occur. Mere participation in a gaming simulation without systematic feedback and critique, keyed to instructional objectives, is simply not enough to insure effective learning. While some little learning may occur solely through participation, it is likely to be weak, random, and uncontrolled.

For the above reasons, gaming simulations for training purposes should be designed in two components -- a Gaming Simulation Component and an Instructional Component. The Gaming Simulation Component is the actual vehicle -- the gaming simulation -- within which players participate. The Instructional Component includes systematically planned procedures and instruments for evaluating performance, feeding back results and observations, and conducting critiques.

The function of a gaming simulation used for assessment is to create one or a series of situations -- a set of stimulus conditions -- which will evoke from participants performance indicative of the skills and personal attributes to be assessed. Assessors observe the performance and evaluate it in terms of predetermined instruments designed to provide some indication of the level of performance that is achieved.

For assessment, the requirements are for conditions that will insure that the behavior to be assessed actually occurs and instruments and procedures which are systematically designed to measure the evoked behavior. Accordingly, gaming simulations suitable for assessment should also be designed in two components -- a Gaming Simulation Component and an Assessment Component. As with training, the Gaming Simulation Component is the vehicle within which players participate. The Assessment Component consists of the instruments and procedures through which performance is observes and measured.

Ideally, gaming simulations should be specifically designed to accomplish either training or assessment. However, if necessary, the same Gaming Simulation Component can be used for both purposes, with the appropriate addition of either an Instructional Component or an Assessment Component.

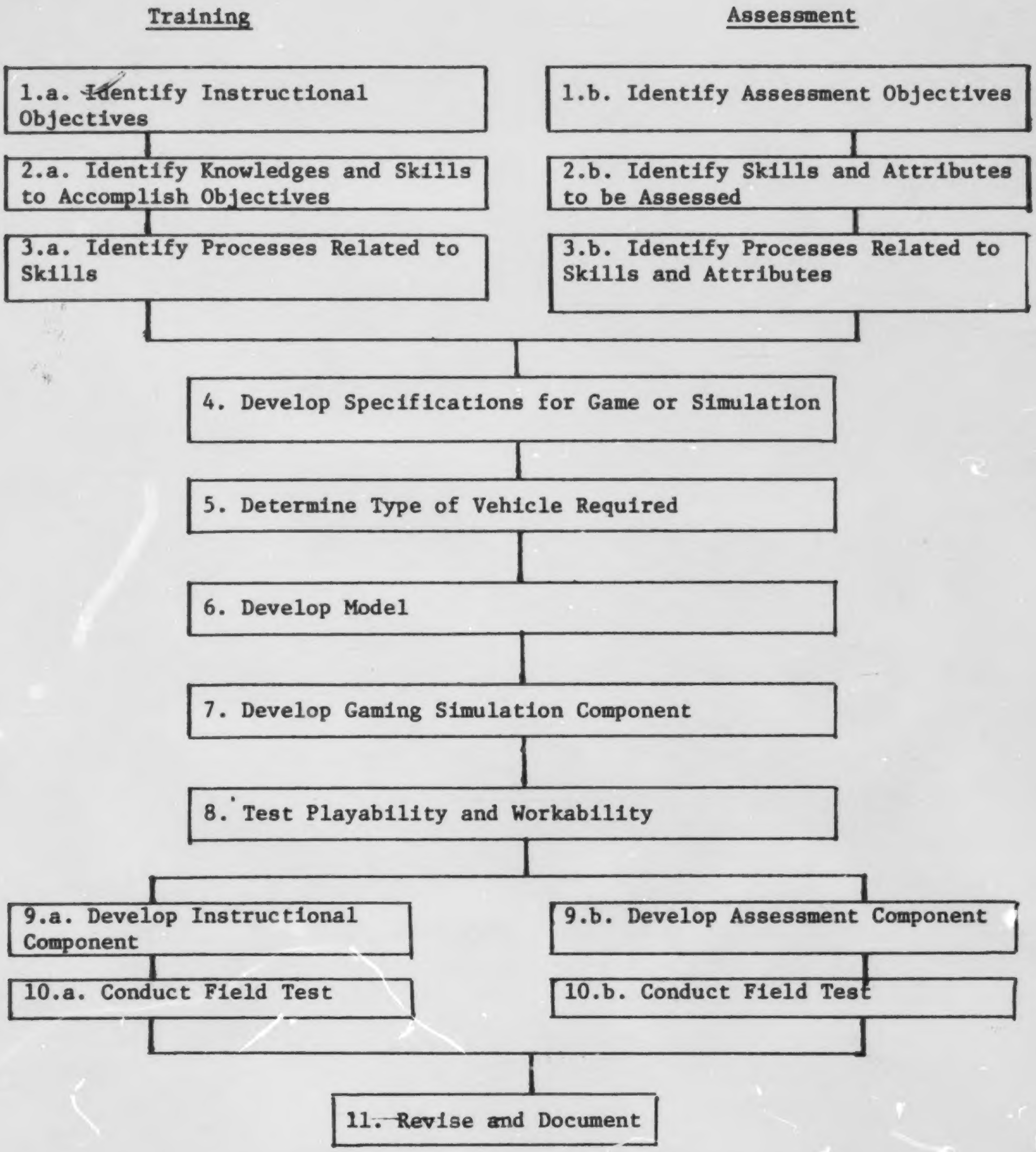
Although it is possible to train and assess simultaneously, ie., assess the same individuals who are being trained, this practice is not recommended. The new learnings achieved during the course of an effective gaming simulation used for training will tend to contaminate assessment results, unless learning ability is a factor to be assessed.

THE DEVELOPMENT FRAMEWORK

Figure F-1 shows the recommended framework for developing games, simulations, and gaming simulations for training and assessment. As can be seen from the figure, certain steps are specific to the respective purposes, training or assessment, but other steps are common to both. Actually, all steps for both purposes are similar. Only the operations performed within the separated steps are different.

Figure F-1

DEVELOPMENT OF GAMING SIMULATIONS


Training
Assessment
1.a. Identify Instructional Objectives
1.b. Identify Assessment Objectives
2.a. Identify Knowledges and Skills to Accomplish Objectives
2.b. Identify Skills and Attributes to be Assessed
3.a. Identify Processes Related to Skills
3.b. Identify Processes Related to Skills and Attributes
4. Develop Specifications for Game or Simulation
5. Determine Type of Vehicle Required
6. Develop Model
7. Develop Gaming Simulation Component
8. Test Playability and Workability
9.a. Develop Instructional Component
9.b. Develop Assessment Component
10.a. Conduct Field Test
10.b. Conduct Field Test
11. Revise and Document

DEVELOPING GAMING SIMULATIONS

The following descriptions of recommended steps in developing gaming simulations are numbered to agree with the framework shown in Figure F-1.

1.a. Identify Instructional Objectives. For training purposes, the first step requires identification, or specification, of the instructional objectives to be achieved by the block of instruction with which the gaming simulation is to be associated. Although all objectives for the block of instruction should be identified, the number of objectives to be accomplished by the gaming simulation should be limited to a reasonable few. Select those objectives which appear amenable to the use of experiential training.

1.b. Identify Assessment Objectives. For assessment, the task is to identify the purposes to be accomplished by the assessment. Is the assessment for selection purposes? For career development counseling? For performance appraisal? For assessing potential?

2.a. Identify Knowledges and Skills Required to Accomplish Instructional Objectives. If required knowledges and skills have not been already determined, analyze each of the selected instructional objectives and derive the knowledges and skills needed to accomplish them.

2.b. Identify Skills and Attributes to be Assessed. Keeping the assessment objective(s) in mind, determine the skills and personal attributes that should be assessed. Skills and attributes can be best determined from analysis of job requirements.

3.a. Identify Processes Necessary to Exercise and Develop Required Knowledges and Skills. Use the Process Model to derive the processes and functions executed by players in games and simulations from the required knowledges and skills. Determine which processes, when performed, will develop the knowledges and skills. Processes that are similar in the skills and attributes that are developed may be designated as alternatives. Those alternatives which best fit the overall training concept might be retained and the others discarded. However, in considering decisions to retain only one alternative, it should be remembered that, in experiential learning, a variety of opportunities to exercise skills will enhance development. The product of this step should be a list of processes and functions that are desired to be executed by players in the gaming simulations.

3.b. Identify Processes Related to Skills and Attributes. Use the Process Model to delineate the processes and functions that will evoke the skills and attributes to be assessed. Determine which processes and functions, when performed, will result in display of the required skills and attributes. Processes that are similar in the skills and attributes that are evoked may be designated as alternatives. Those alternatives that best fit the assessment concept might be retained and the others discarded. However, in considering decisions to retain only one process, it should be remembered that more than one opportunity to observe display of a skill or attribute will enhance reliability of assessments. The product of this step should be a list of processes and functions that are desired to be performed by players in the gaming simulation.

4. Develop Specifications for Game or Simulation. Specify what the vehicle (game, simulation, gaming simulation) must do in order to evoke performance of the processes identified in 3.a. or b. Should the vehicle geneate competition? Model the real world? Stimulate role performance? Evoke interpersonal interaction? Generate communication? What? Delineate in detail all of the things that the vehicle must do. Note: to this point, no decision should have been made as to the type of vehicle to be developed.

5. Determine Type of Vehicle Required. Use the above specifications to choose the type of vehicle to be developed. Select the vehicle that should meet the specifications most effectively.

6. Develop Simulation Model. Design and development of a simulation requires a concept of those aspects of reality that are simulated. A simulation model provides this concept. Thus, the general function of such a model is to provide a blueprint of the reality that is simulated. As a blueprint, it guides the design and development of the simulation.

A gaming simulation is only as good as the model on which it is based. The model is usually stated in general terms and may include many variables that may be deleted or altered as the simulation develops. Thus, a simulation is a representation of its model, but not an exact image. However, it behooves a designer to construct or use the best model he can so that he subsequently develops a fair chance of getting the simulation to behave reasonably like reality and, more important, of obtaining realistic behavior from the people who participate in the simulation. For these reasons, considerable discussion will be given to model development.

More specifically, a model specifies variables in the real world and relationships among variables. For example, a model specifies elements of the real world such as people, organizations, roles, available resources, goals, etc. The model also specifies the relationships among these elements, eg., authority, power, communication links, effects of one variable upon another, etc. Thus, the function of a model is as follows: It guides construction of the gaming simulation by specifying the variables and relationships among variables that are to be simulated and enacted during play through the interaction of players, rules, and paraphernalia of the gaming simulation.

There are no definite rules for model construction. The methods and procedures involved tend to vary with the nature of the model and with the developer's knowledge of the phenomena being modeled. However, general activities describing the process will be outlined to provide a general understanding.

Specify purpose of model. Whenever a model is constructed, it is necessary to specify the purpose of the model and the gaming simulation based upon it. Specification of the purpose establishes a framework and boundary conditions for construction of the model. Moreover, unless the purpose has been clearly identified, one cannot evaluate the model. For training and assessment, models represent real-world events/activities/conditions which are conducive to learning or assessment and which are to be enacted in play of the gaming simulation. Accordingly, the particular environments, events, activities, and conditions to be modeled should be specified.

Specify the essential features of the model. Features are the basic elements and relationships discussed earlier. Specification of the features of the model involves two sets of activities: (1) Collecting information about the system or phenomena to be modeled; (2) Abstracting relevant information so that information of the correct types, amount, and level of detail can be incorporated into the model.

One advantage of simulation is that it is a simplification of reality. That is, only those aspects of reality are modeled and simulated which are relevant to the purpose of the endeavor. Simplification is an advantage because it facilitates understanding of that which is represented. Moreover, the greater the simplicity, the more economical is the model.

Probably one of the greatest traps for the designer involves incorporating so much detail in the interest of realism that the model and ensuing simulation become so complex that the essential aspects of reality are overshadowed. On the other hand, the designer must include all factors necessary for learning or assessment. Depending on the requirements, it may be necessary at times to develop very complex models.

Thus, an important activity in model design and development involves abstracting available information to determine the amount, type, and level of detail of information that is to be included in the model. This involves recognizing the relevance and importance of information to the required activities.

Each feature of the model must be explicitly defined. Clear, precise definition is important for several reasons. It enables the designer to evaluate the model as a model. Also, the model is to serve as a guide for construction of the gaming simulation. If the model is ill-defined, its usefulness as a guide will be reduced and, furthermore, errors may be introduced into the gaming simulation.

Explicit definition of all features of a model depends on the data available to the designer. However, sometimes, there are uncertainties in a system that either cannot be reduced without introducing unnecessary complexity into the model or information is not currently available for reducing them. In business games, examples of such uncertainties are certain aspects of the economy and actions of business competitors. In such cases, the designer must determine how to cope with the uncertainty. One technique is to account for the uncertainty by introducing probabilistic relationships into the model.

In brief and stated very simplistically, model development involves the following:

(1) Specifying the elements (people, groups, and organizations) to be involved.

(2) Defining the relationships between the elements.

(3) Defining the in-role motives and goals of the players.

(4) Defining the resources available to players.

7. Develop Gaming Simulation Component. This phase involves translation of the model into the gaming simulation. The aim is to plan and construct the parts of the gaming simulation so that the elements of the model are accurately and completely represented by them. Such development involves construction of scenarios, rules, and materials.

In gaming simulation, a "scenario" is that material which "sets the stage", "provides a setting" for the players, or affects the course of play so that players have the desired experiences. Scenarios consist of background material and game inputs.

Items of background material are information provided to players prior to or at the beginning of play. They provide a "set," focus, or frame of reference for experiences during play of the gaming simulation. They may consist of players' roles, pertinent background information, players' objectives, and the current situation, all of which define starting conditions for play. Thus they provide guidance which structures players' activities during the game.

Background items serve as especially important functions in gaming simulation. If properly constructed, they orient play of the game so that the player experiences intended by the designer actually occur throughout its duration. In the ideal gaming simulation, once play has been initiated, players' experiences are largely dependent upon their own actions and counteractions. Unless the players have been properly oriented, the experiences intended by the designer may not occur or, if they do, may not have sufficiently important impact in the total experience. Thus, by properly orienting players, background information and starting instructions permit instructors to exert some degree of control over that portion of players' experiences which is most variable in gaming simulation -- actual play.

As stated above, under ideal conditions, play should be spontaneous and unprompted once it has begun. However, if gaming simulations are especially long and complex or if designers fear that background items will not provide sufficient control, inputs, usually in the form of messages, can be inserted during the course of the game. Such inputs should always be preplanned and designed into the scenario. They should never be used merely to stimulate player activity or as instructor options to control the direction of play. Care should be taken that game inputs are natural and fit into the ongoing scenario.

In any gaming simulation, some rules are necessary. However, the number, type, and complexity of rules is determined by the nature of the simulation and, more critically, the complexity of the model that is used. The following types of rules may be required: Behavior Constraint Rules, Procedural Rules, Environmental Constraint Rules, and Accounting Rules.

Behavior Constraint Rules correspond to the role obligations found in real life and specify what the player must do, what he cannot do, and what he can do if he wants to. The extensiveness of role-oriented rules in a particular gaming simulation may depend upon the degree to which players are to operate as individuals or as members of teams of players, and upon the degree to which players have different roles. To develop such rules, one must first determine those aspects of a player's assigned role that constitute essential elements of the conditions that impact upon required behavior. The question to be asked is, "Could the player realistically achieve his objectives if he operates in the gaming situation in a way which an individual in his role in real life would not be allowed to behave -- without penalty?" If the end results must be obtained within the framework of real-world role requirements, rules which insure performance according to those requirements must be developed.

Procedural Rules specify how the game is put into play and the general order in which play must proceed. They include such rules as what can or must occur on "turns" or periods during game play and in what order they must occur.

Environmental Constraints specify the way in which the social or physical environments, not simulated by players, impact on each other and the actions of players. An example in management games is an office Standard Operating Procedure which stipulates types and the form of contacts that may be made with simulated superior and subordinate level personnel. Gaming simulations which are interpersonal ascendant and relatively static in time and space require only a few, if any, environmental constraint rules.

Accounting rules are a form of environmental rule. They come into play because of the competition between players or of interaction between players and their environments. That is, accounting rules are the environmental rules which govern the outcomes of competition or conflict between individual players or teams, or, in the case of simulations, of player decisions and actions. They provide the guidance for determining the results of players' actions. In simulations of combat operations, accounting rules determine "combat results," e.g., weapons effects, personnel or equipment losses, etc. Similarly, in business gaming simulations in which players must expend resources to achieve effects, accounting rules determine outcomes. A typical question to be resolved in these games is, "If Player A uses some of his resources in a particular way against some of Player B's resources, what is the outcome?"

An important distinction here concerns whether accounting rules should be deterministic or probabilistic. Deterministic Rules have resolution mechanisms which give invariant and ultimately predictable outcomes. That is if the same input is made to the simulated system at different points in time during the run of the simulation, the appropriate resolution mechanism will always determine the same output. On the other hand, Probabilistic Rules, also known as "stochastic" rules, incorporate resolution mechanisms in which outcomes are subject to chance variations over time, given the same input. With a sufficient number of repetitions of the same input, however, the variations in output would closely match the probabilities for each possible output. Resolution mechanisms may involve use of probability tables, rolls of dice, or computerized stochastic models.

Deterministic Rules are simpler to develop. However, the use of Probabilistic Rules provides greater simulation of reality through recognition of potential variability in outcomes and, for that reason, are quite valuable for making players aware that most decisions and actions cannot be made with complete certainty of outcomes.

At this point in development, it will be necessary to decide whether a computer should be made a part of the gaming component. In contrast to military tactical games and simulations, where complex environments and combat forces are modeled, computers are used in business games most commonly for accounting purposes. That is, they are used only to follow Accounting Rules in computing outcomes of expenditures of resources and in keeping track of resources remaining to the various players or teams. Accordingly, determination of whether a computer is to be used should be made on the basis of complexity of calculations to be made, numbers of variables impacting upon results, and whether a computer can provide significantly more rapid feedback of results. It is probable that, for most games or simulations concerned with the interpersonal, decision-making, and problem-solving processes involved in junior company-grade officer jobs, computations will not be sufficiently complex to require use of a computer.

Other major means for applying accounting rules include manual calculation of results; use of pre-designed results tables, which may take into account the effects of varying situational conditions and variables; tallying of counters, results cards, etc., upon completion of the exercise; and use of umpires to decide outcomes of player actions. No one of the above methods is superior to another. Which method is selected should be determined by the complexity of computations, the number of variables involved, and the time required to determine results in relation to requirements for prompt feedback. The use of umpire judgments to decide outcomes is desirable only if more objective methods are not feasible.

Materials required to play are specific to any particular gaming simulation and will vary widely. For interpersonal-ascendant simulations, in which elements of the social environment are most prominent, paraphernalia and materials may be a minor problem for designers. In contrast, paraphernalia for gaming simulations of real-world systems where a physical environment is an important source of input can task the time and ingenuity of designers severely. It is possible to play a gaming simulation entirely with paper-and-pencil. Most existing gaming simulations, however, embody some combination of paraphernalia ranging from purely symbolic, two-dimensional representations to life-size replicas of portions of the real world. In terms of materials, a rule of thumb is to start as simply as possible and elaborate if necessary. Whether elaboration is necessary is determined by testing. Whether elaboration is possible is dependent upon the resources available to the designer.

Briefly, steps in developing a Gaming Simulation Component are as follows:

(1) Specify Required Experiences. Within the context of the gaming simulation, specify types of experiences or problems that will provide the type of learning and practice or evoke behavior specified in earlier steps of the framework.

(2) Specify Scenario Elements. For each desired experience or problem, specify the scenario elements that will generate the problem, the conflict, or the experience.

(3) Design the Scenario Elements. Write, develop, or otherwise prepare the materials needed to insure that the required experiences actually occur.

(4) Integrate the Elements Into an Overall Scenario. Fit the elements together such that the final scenario is realistic and playable. Note that a particular element, e.g., background information or statement of initial conditions may contain items of material that will generate a variety of different training experiences.

(5) Define the Rules.

(6) Determine whether a Computer is Required.

(7) Develop Required Materials.

8. Test Playability and Workability. After development of the Gaming Simulation Component has been completed, it should be tested for workability and playability. This test is, in effect, a "pilot test" to determine whether the vehicle will actually work according to the intent of the designer.

Content validity of a model does not insure that the gaming simulation will be effective. In addition, the model must have been properly translated into an effective vehicle which operates according to the model and which provides the required experiences. This condition is reflected in the concept of workability. Workability is the extent to which a gaming simulation operates as it is planned to operate according to the model for its design and development. Certain features of this concept should not be overlooked. First, the definition of "workability" indicates that a workable gaming simulation is based on the model for its design and development. This implies one condition necessary for workability: all essential features of the model have been faithfully translated into the gaming simulation. Second, operation of the gaming simulation is underscored. It is not sufficient that parts of the gaming simulation bear a one-to-one relationship to features of the model under static conditions. In addition, when the gaming simulation is played, the changes that occur in the elements of the gaming simulation should conform to those implied by the model. Finally, the definition also includes a notion that the gaming simulation should operate as planned.

Playability is the ease and smoothness with which a gaming simulation can be learned and played by the players for whom it was designed. Playability seems to contribute to the effectiveness of a game or gaming simulation used in instruction in two respects. First, if a game is playable, players do not have to concentrate on the mechanics of play. They are freer to become involved in the planned experiences. Thus, playability reduces one potential disadvantage of games/gaming simulations. Second, if a game is too complex, too cumbersome, too tedious, or too difficult, motivation is reduced. Thus, playability permits the motivating features of games -- fun, involvement, conflict -- to contribute to learning.

Therefore, at this stage of development, it is most important to test the gaming simulation for workability and playability. Most likely, some, at least, minor problems will be identified and these should be corrected before development of the instructional or assessment components.

9.a. Develop Instructional Component. The Instructional Component consists of procedures which are specifically designed to insure learning, provide knowledge of results, and reinforce the experiences acquired during participation in a gaming simulation. It consists of two parts -- an evaluation system and a critique system.

An Evanuation System is a set of procedures, materials, and/or personnel for evaluating performance during play of a gaming simulation. Two types of evaluation systems can be used separately or simultaneously with a single gaming simulation. Use of both is desirable.

An Internal Evaluation System consists of the procedures through which outcomes of events simulated in play of the gaming simulation are determined. If the gaming simulation has been properly constructed for instruction, such rules and procedures will assess players' performance by differentiating between good and poor outcomes. That is, outcomes determined by these rules will reflect quality of performance, in terms of either relative performance among players or in comparison with an external criterion. Comparison with an external criterion is more desirable for training purposes.

A second type of evaluation system includes procedures, materials, and/or personnel for recording information about players' performance and their associated outcomes. This system is referred to as an "external system" because of the manner in which the recorded information is used. That is, this information does not necessarily affect activities during play of the gaming simulation. Rather, it is typically provided to players after play of the game has been completed or temporarily halted.

The purpose of an external evaluation system is to collect and record information that describes players' performances and the associated outcomes of these performances.

Evaluation procedures are the ways in which evaluators assess the performance of players. They may involve observation, keeping continuous records of the actions and the events that occur in each period of play, recording the most significant critical incidents that occur during play, recording accounting results, e.g., losses of resources, etc. Evaluation materials are the instruments used by evaluators to score, or otherwise record, the performance of players, critical incidents, the flow of play, and any other information needed to assess player performance or feed results back to players. Instruments may be: checklists, rating scales, observation forms, controller report forms, used by controllers to submit summary reports evaluating overall performance of players, and forms for recording accounting results. In computer-based games or simulations, an important element of evaluation may be the computational results produced by the computer.

Personnel who are part of the evaluation system may be:

(1) Controllers or umpires, who also evaluate player performance.

(2) Personnel assigned solely to serve as evaluators.

(3) Under some conditions, evaluators may be other students who serve solely as recorders of events and feed back results to players. This method reduces requirements for instructors or experienced personnel.

It is not efficient in evaluation to attempt to cover all behavior of a player. It is more efficient to focus only on the performance relevant to the training objectives. In addition, to be maximally effective, an evaluation system must be "scenario-specific." The term "scenario-specific" means that judgments about the quality of players' performance must be in terms of conditions and standards relevant for a particular scenario. Thus, a scenario-specific evaluation item might ask the question, "In the decision concerning whether to recommend Employee A for promotion, was there evidence that factors X, Y, and Z were considered?" It is possible to devise evaluation schemes that would have applicability to a variety of scenarios, or even to a number of different games of the same type. However, of necessity, the evaluation criteria would have to be so general that the scheme would have highly questionable reliability. Accordingly, it is more effective to make evaluation systems scenario-specific. This limits their use to a single scenario; however, one scenario-specific system can be readily modified for use with another. Scenario-specific evaluations can be used as bases for subsequent ratings of more general attributes, such as "adaptability."

Within the context of the scenario, it is important to specify what constitutes effective and ineffective performance. For each point in the scenario at which one or more critical performances is likely to occur, establish criteria for effective and ineffective performance and operationalize them, i.e., state in terms specific to the scenario what will be evidence of effective or ineffective performance. The product of this step should be scenario-specific criteria for each performance critical to the training objectives.

Develop procedures for observing and evaluating each item of performance. Determine the precise method to be used by an evaluator to assess player performance. Types of procedures were discussed earlier. For each critical performance, determine the procedure to be used. Note that, except for rating scales, all the instruments discussed earlier provide means for recording events -- what occurred and why -- and are not intended for assigning scores to performance. This is intentional because the purpose of "evaluation" for feedback and critique is not to assign a score to a person's performance. It is to provide him information about what he did and what effect his actions exerted on outcomes. Accordingly, the purpose of the instruments is mainly to record what happened for later reference. Evaluators should be prepared to tell players not only how well they performed but why. Materials are needed to cover all performances and evaluation settings.

The Feedback and Critique System is the mechanism through which players learn about the quality of their performance. It enables them to review their actions and the effects of these actions upon outcomes in the simulations. Feedback and critique should focus upon training objectives. It should be organized so that the following is clearly accomplished:

(1) Players recognize their degree of accomplishment of each training objective.

(2) Players recognize specific reasons for failure not to reach training standards; that is, players should be led to understand and recognize what they did that led to inadequate performance and how this performance impacted on the outcomes of the simulations.

9.b. Development Assessment Component. The Assessment Component consists of the instruments to be used by assessors and the procedures used by them in making their assessments. Assessment procedures may cover the full range of behavioral analysis techniques; however, for business games, the most common and most satisfactory procedure is observation of game performance by assessors who are trained specifically to evaluate skills and attributes according to preplanned protocols, to record assessments using specifically-tailored rating scales and check lists, and, in addition, to analyze and report qualitative observations concerning players' skills and attributes.

Instruments and assessor guidance should be addressed to the skills and attributes identified in Step 2.b.

10.a. Conduct Training Field Test. This step requires the conduct of a full-fledged validation of the entire Training Gaming Simulation System (Gaming Simulation Component and Instructional Component). All of the usual controls and procedures for validating training programs against instructional objectives should be observed. Briefly, validation controls and procedures should include use of (1) equivalent forms of performance-based criterion tests; (2) control and test groups of subjects equivalent in knowledge and experience to anticipated student population; (3) pre- and post-test measurement of criterion performance; and (4) evaluation of change in performance attributable to exposure to the gaming simulation.

10.b. Conduct Assessment Field Test. This step involves a "full-dress" test of the entire Assessment Gaming Simulation System (Gaming Simulation

Component and Assessment Component). The purpose is to evaluate the feasibility of the system for effectively, validly, and reliably assessing the skills and attributes for which it was designed. Particular attention should be paid to the practicability of the observational, recording, and reporting procedures required of assessors, ie., the extent to which procedures may be used easily to produce information that will be useful in evaluating assessees.

11. Revise and Document. For both types of gaming simulation systems, make any revision indicated by results of the field test. Then, prepare all required documents in final form. These will include administrator's manuals for the gaming simulation, players' materials, training evaluation, feedback, and critique instructions and materials, and assessor manuals and materials.

Research Product
77-22

HumRRO
RP-ED(C)-77-22

HumRRO

A Catalogue of Business Games for Use in Developing and Assessing Junior Company Grade Officers

by

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October 1977

Prepared for

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CONTENTS

Page

INTRODUCTION 1

GAMES AND SIMULATIONS

Administration 7
Appraisal by Objective (Coaching and Appraising) 8
Assigning Work 9
Automation 10
The Bridge Game (Part of Supervisory Skills Series) . . . 11
Buddies 12
CADISIM (Computer Assisted Disposal Simulation). 13
CAISIM (Computer Assisted Industrial Simulation) 14
CALOGSIM (Computer Assisted Logistics Simulation). 15
Communicating for Results 16
Communication 17
Conglomerate 18
Constructive Discipline 19
Con-Tac-Tix 20
The Cork Balls Game (Part of Supervisory Skills Series). . 21
Decision 22
Delegation 23
Grievance Handling 24
Handling Conflict in Management I 25
Handling Conflicts in Management II 26
Instruction 27
Interaction 28
Leadership 29
Leading Groups to Better Decisions 30
The Lumber Yard Game (Part of Supervisory Skills Series) . 31
Management by Objectives 32

CONTENTS (Cont'd)

Page

Management Exercises 33

Management of the Physical Distribution Function 34

Management for Supervisors 35

Managing the Worker 36

Managing Through Face-To-Face Communication 37

Monopologs 38

Motivation 39

The Nesting Boxes Game (Part of Supervisory Skills Series) . 40

Office Management 41

Optimum Delegation 42

The Performance Game (Part of Supervisory Skills Series) . . 43

The Personnel Department 44

Physical Distribution Management 45

Planned Maintenance 46

Planning 47

Priority 48

Production Control Inventory 49

Profair 50

Prosper 51

Selecting Effective People 52

Selection 53

Sensitivity 54

The Sticks 'N Stones Games (Part of Supervisory Skills Series) 55

Supervision 56

Supervisory Skills 57

Supply and Demand Game 58

INTRODUCTION

This catalogue contains descriptions of 52 management games, simulations, and gaming simulations identified by the Human Resources Research Organization (HumRRO) as suitable for use in the training or assessment of junior company-grade military officers for administrative, nontactical support, or staff jobs. The included items were selected from a much larger group of games and simulations and were chosen for inclusion on the basis of either suitability for use in their present form or suitability for adaptation to requirements for training or assessing junior officers. Suitability for adaptation is indicated in the "Notes" section of the description. Where no mention is made of suitability for adaptation, the item was judged to be suitable for use in its present form.

Games and simulations that are specifically designed to accomplish particular objectives, instructional or assessment, are much more likely to be effective than those which are designed for other purposes. However, most of the games and simulations described herein can be modified to fit various objectives.

The catalogue was developed to provide assistance and guidance to individuals who must locate and select management or business games for possible use with junior officers and to those who wish to identify and study relevant games as preparation for developing new ones. The descriptions that appear herein provide only the most basic information. From them, it should be possible to make an initial determination of suitability of a game or simulation for a desired purpose. However, final selection of any of the games and simulations described here, should be made only after a direct and thorough examination of actual pertinent gaming instructions and materials. Decisions to use should not be based solely upon the relatively brief descriptions presented in the catalogue.

This catalogue was designed to be used in conjunction with HumRRO Technical Report The Use of Management Games for Developing Army Officers in Administrative and Staff Jobs dated October 1977. Discussions of the methodology and categories of information used in development of the catalogue descriptions appear in the report.

Following are definitions of the categories of information that appear in the game descriptions:

TITLE:

1. TYPE: (Whether manual or computer assisted; whether game, simulation, gaming simulation, or other; whether media-ascendant or interpersonal-ascendant).
2. CONTEXT: (Type of environment depicted in game, eg., business, military, civilian government, etc.).
3. STATED PURPOSE: (Purpose of the game as stated by its designers).
4. POTENTIAL USE: (Training, assessment, or both).
5. POTENTIAL FUNCTIONS: (Training and assessment functions served by the game; see model).
6. PROCESS TRAINING POTENTIAL: (Processes, and functions, for which personnel could be trained by the game; see model).
7. PREREQUISITES: (Knowledge, skill, or experience requirements necessary for meaningful participation by players).
8. DESCRIPTION: (Summary of the game; its essential elements, structural characteristics, player activities, etc.).
9. STUDENT OBJECTIVES: (What students are trying to achieve in their player-roles during the game).
10. DECISIONS MADE BY STUDENTS: (Types of decisions that students must make during play).
11. EXERCISE DATA AND REQUIREMENTS:

    NUMBER PLAYERS: (Number of individuals, and teams if applicable, accomodated simultaneously).

    PLAYING TIME: (Total lapsed time required to complete the game).

    INSTRUCTOR PREPARATION: (Time required for an instructor to prepare to conduct the game).

    STUDENT PREPARATION: (Time required, if any, for advance student preparation).

    COMPONENTS: (List of the items and materials needed to play the game).

    SPECIAL EQUIPMENT: (Unusual or expensive equipment, eg. computer, required).

    COST: (Cost for game materials, permission to use, etc.).

    SOURCE: (Name and address of individual, firm, or organization from which materials and information about the game may be obtained).

    AUTHOR: (Original designer).

12. TRAINING VALUE: (See discussion below).

EFFECTIVENESS RATING: (Rating of relevance and potential effectiveness).

COST RATING: (Rating of estimated costs in relation to number of students to be processed).

EFFICIENCY: (Effectiveness in relation to costs).

13. NOTES: (Include any additional information or comments that would be useful).

14. REFERENCES: (List any publications, articles, etc. which describe or present evaluative information about the game).

Item 12 above is concerned with Training, or Assessment, Value. Knowledge of the methodology for deriving indices shown for this item will be helpful for interpreting them.

Effectiveness is the ability of a game or simulation to accomplish the developmental or assessment purposes for which it is designed. For evaluation of training effectiveness, two elements were identified -- relevance for the target population and potential of the game methodology for developing skills in the target population. For evaluation of assessment effectiveness, two elements were also identified -- potential for evoking pertinent observable behavior and quality of assessment procedures and instruments, if any.

Efficiency is the effectiveness of a game or simulation in relation to its costs in terms of materials, special equipment, number of instructors required, instructor preparation time, and time to conduct, proportionate to the number of students that can be processed. Thus, efficiency is the ratio of cost to effectiveness.

Since data concerning both effectiveness for training or assessment and such costs as time to conduct, instructor preparation, etc. will not be readily available to evaluators, a system was devised for rating effectiveness and costs on 10 point scales. Use of ratings for both effectiveness and costs made it possible to compute an efficiency ratio. The ratings are described below.

The Methodology. Following is the methodology which was used for evaluating the utility of games:

(1) Determine the critical tasks or job requirements which should be the focus of training or assessment.

(2) Analyze the game or simulation and record the information required by the framework shown above, taking into account the job requirements identified in (1).

(3) Compute a Training Efficiency Rating.

   a. Identify the training objectives for the block of instruction to be covered by the game or simulation.

   b. Judge relevance of the game for the population to be trained, based on (1) organizational levels to be played by participants, and (2) pertinence of the context, problems, and potential processes of the game.

   c. Judge the potential of the game methodology for effectively accomplishing the training objectives identified in (2) above.

   d. Use the scale shown below to rate Training Effectiveness, taking into consideration both relevance (3)b., and methodology, (3)c. Select any number between 1 and 10 that best fits the judgment of effectiveness.

Low Effectiveness				Moderate Effectiveness					High Effectiveness
1	2	3	4	5	6	7	8	9	10

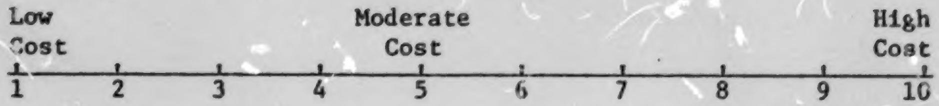
   e. Record the rating as the "Training Effectiveness Rating".

(4) Compute a Cost Rating as follows:

   a. From the information recorded in (2) above, identify costs of materials and special equipment, number of instructors required, instructor preparation time, time required to conduct.

   b. Consider total estimated costs based on the above factors in relation to number of students to be processed. It may be possible to estimate a per-student cost.

   c. Use the scale below to rate Training Costs, taking into consideration total costs in relation to students to be processed.



d. Record the rating as "Training Cost Rating."

(5) Compute Training Efficiency as follows:

$$\text{Training Efficiency} = \frac{\text{Training Effectiveness Rating}}{\text{Cost Rating}}$$

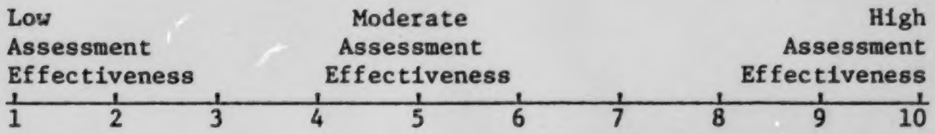
(6) Compute an Assessment Effectiveness Rating as follows:

a. Identify the skills (processes) and personal attributes which are to be assessed.

b. Judge the potential of the game or simulation for evoking the processes and attributes to be assessed.

c. Judge the quality of the assessment procedures and instruments associated with the game, if any.

d. Use the scale shown below to rate potential Assessment Effectiveness, taking into consideration both potential for evoking processes and attributes, (5)b., and assessment methodology (6)c.


Low Assessment Effectiveness
Moderate Assessment Effectiveness
High Assessment Effectiveness
1
2
3
4
5
6
7
8
9
10

e. Record the rating as "Assessment Effectiveness Rating".

(7) Compute Assessment Efficiency as follows:

$$\text{Assessment Efficiency} = \frac{\text{Assessment Effectiveness Rating}}{\text{Cost Rating}}$$

The indices for Training or Assessment Efficiency can range from .10 to 10.00. For example, if a game were judged to be highly effective, with a rating of 10, and costs were judged to be moderate, with a rating of 5, the Training Efficiency index would be 2.0. On the other hand, if costs for another equally effective game were so high as to receive a Cost Rating of 10, the efficiency index would be 1.0. Thus, even though effectiveness for both games were equally high, sizable costs would make the second game less efficient. A less effective game with a rating of 6 but with lower costs rated at 6 would also receive an efficiency index of 1.0. Both games would be equally efficient, even though one was much more effective.

Where such comparisons are made, training managers must decide where a less efficient, ie., more costly, but more effective game is desirable. The evaluation scheme described above permits such decisions to be better informed.

TITLE: ADMINISTRATION

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To develop general administrative skills.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Directing, managing, planning, organizing, decision-making, developing policies and procedures, information processing, problem analysis.
7. PREREQUISITES: Some experience within organizations helpful but not essential.
8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. Structured around overlapping administrative functions such as organizing, problem solving, managing paperwork, assigning tasks, controlling, etc. As a service supervisor, the player is challenged to operate efficiently while confronted with administrative decisions and typical interruptions. Game score is based on decisions/reactions with built-in scoring device providing immediate feedback. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a non-competitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.
9. STUDENT OBJECTIVES: To achieve best score.
10. DECISIONS MADE BY STUDENTS: Administrative, supervisory, personnel actions.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	1 - Unlimited.
PLAYING TIME:	1 hour.
INSTRUCTOR PREPARATION:	Familiarization with exercise procedures.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
SPECIAL EQUIPMENT:	None.
COST:	$6.95 ea.; $4.50 ea. for purchase of 100 or more.
SOURCE:	Education Research, P. O. Box 4205, Warren, N. J. 07060.
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	6
COST RATING:	1
EFFICIENCY:	6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.
14. REFERENCES: None.

TITLE: APPRAISAL BY OBJECTIVE (COACHING AND APPRAISING)

1. TYPE: Manual, simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To help managers improve evaluation skills and to provide them an opportunity to exchange ideas on use of appraisal interviews to stimulate subordinates toward self-development and improved performance.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Managing, planning, interacting with subordinates, communicating.
7. PREREQUISITES: Instruction in supervision or leadership, interviewing, and concept of appraisal by objectives.
8. DESCRIPTION: In the role of managers in a department with sales-oriented and administrative functions, players gain practice in evaluating subordinates and coaching them in appraisal interviews toward improved performance. They plan appraisal interview, evaluate objectives, discuss personal goals and career paths, and prepare a checklist for performance appraisal by objective.
9. STUDENT OBJECTIVES: To achieve best performance.
10. DECISIONS MADE BY STUDENTS: Evaluation of subordinate performance, how to approach and conduct interview.
11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 3-5 in one team, any number of teams.
    PLAYING TIME: 2-3 hours.
    INSTRUCTOR PREPARATION: 1 hour.
    STUDENT PREPARATION: None.
    COMPONENTS: Player's manual, Administrator's manual.
    SPECIAL EQUIPMENT: None.
    COST: $17.50 for 5 players. $.50 Instructor's manual.
    SOURCE: Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016.
    AUTHOR: Unknown.
12. TRAINING VALUE:
    EFFECTIVENESS RATING: 8
    COST RATING: 3
    EFFICIENCY: 2.67
13. NOTES: Can be adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: ASSIGNING WORK

1. TYPE: Manual, gaming simulation, interpersonal ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To provide an opportunity to explore ideas about assignment of work.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Managing, decision making, planning, organizing, interacting with subordinates, interacting with peers, communicating, participating in group situations.
7. PREREQUISITES: Some exposure to principles of working assignment and motivation or experience in supervising.
8. DESCRIPTION: Players in teams, act as supervisors in a simulated business and the problems of making job assignments, communicating job requirements, setting goals and standards for jobs, dealing with substandard performance, controlling work time and recognition of achievement. The outcome is in both individual and team scores based on "correctness" of solutions. Chance does not influence the play or the outcome. Team play involves both cooperation and conflict.
9. STUDENT OBJECTIVES: To achieve highest score.
10. DECISIONS MADE BY STUDENTS: Job assignments, setting goals and job standards, how to communicate job assignments to employees, how to handle substandard work, handling absenteeism and tardiness, how to give recognition for good performance.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 3 minimum per team, any number of teams.
    - PLAYING TIME: 3 hours.
    - INSTRUCTOR PREPARATION: 1/2 to 1 hour.
    - STUDENT PREPARATION: None.
    - COMPONENTS: Players' manuals, administrator's manual.
    - SPECIAL EQUIPMENT: None.
    - COST: $17.50 for 5 player set; $.50 for Administrator's guide.
    - SOURCE: Didactic Systems, Inc. 6 N. Union Avenue, Cranford, N. J. 07016
    - AUTHOR: Unknown.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 5
    - COST RATING: 4
    - EFFICIENCY: 1.25
13. NOTES: Suitable for junior officers in present form; could be improved by adapting it to military-civil service context; suitable for assessment when relevant assessment instruments are added.
14. REFERENCES: None.

TITLE: AUTOMATION

1. TYPE: Manual, simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To gain insight into the problems of interpersonal relations negotiation, and persuasion in a stressful situation.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Interacting with peers, communicating, participating in group situations, problem analysis.
7. PREREQUISITES: Instruction or orientation in group dynamics, human relations, and group problem solving.
8. DESCRIPTION: Participants, as members of a team, act as a bank management group and efficiency expert. The object of the team's effort is to persuade the bank staff to cooperate with a new system (an automation program). The success of the team's activities is judged by the amount of savings affected in the banks operation, the amount of cooperation won by the efficiency expert, and the pay raises or firings sustained by the staff. Emphasis is upon strategies for gaining acceptance of innovation.
9. STUDENT OBJECTIVES: To obtain the cooperation of the bank staff for initiation of an automated system.
10. DECISIONS MADE BY STUDENTS: Strategies of obtaining acceptance of innovation.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	20 - 30
PLAYING TIME:	1 - 2 hours.
INSTRUCTOR PREPARATION:	2 hours.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructor's manual, organization chart, savings criteria.
SPECIAL EQUIPMENT:	None
COST:	Unknown.
SOURCE:	Abt Associates, Inc., Boston. Mass.
AUTHOR:	Clark C. Abt.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	8
COST RATING:	3
EFFICIENCY:	2.67

13. NOTES: Although context is a bank, knowledge of context required is minimal and junior officers could function in this simulation; suitable for assessment when assessment instruments added.
14. REFERENCES: Abt, Clark C. "Twentieth Century Teaching Techniques." Reprint. The Faculty (American Banking Institute), August 1966, pp. 10-11.

TITLE: THE BRIDGE GAME (PART OF SUPERVISORY SKILLS SERIES)

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.
2. CONTEXT: Construction organization.
3. STATED PURPOSE: To further understanding of planning and estimating, styles of supervision, delegation, manpower assignment, responsibility, and morale.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills, attitude development, assessment.
6. PROCESS TRAINING POTENTIAL: Directing, managing, decision making, planning, organizing, interacting with subordinates, interacting with superiors, communicating.
7. PREREQUISITES: Exposure to principles of planning, scheduling, leadership, and supervision.
8. DESCRIPTION: Three companies planning the construction of a miniature bridge are given a blueprint, tools, and materials. One player in each team is designated to be a supervisor. Each company determines how the tasks will be organized and builds the bridge. This is followed by an evaluative discussion on planning and estimating, delegation and utilization, and styles of supervision. Outcomes are qualitative. No quantitative scores.
9. STUDENT OBJECTIVES: To build the bridge within a chosen time estimate.
10. DECISIONS MADE BY STUDENTS: How long the job should take, division of work, specialization or generalization of duties.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 3-16, divided into 3 teams.
    - PLAYING TIME: 1 to 2 hours.
    - INSTRUCTOR PREPARATION: 1 hour.
    - STUDENT PREPARATION: None.
    - COMPONENTS: Instructions and materials for assembling bridge.
    - SPECIAL EQUIPMENT: None.
    - COST: $75.00, 3 games for $200.
    - SOURCE: Training Development Center, Two Pennsylvania Plaza, New York, N. Y. 10001 and Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
    - AUTHOR: Unknown.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 8
    - COST RATING: 7
    - EFFICIENCY: 1.14
13. NOTES: Suitable for junior officers in present form; suitable for assessment when assessment instruments added. Effectiveness for training depends upon quality of feedback and critique after play of game.
14. REFERENCES: None.

TITLE: BUDDIES

1. TYPE: Manual, simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: A study of personnel relations and conflict resolution in a middle management situation.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Managing, problem analysis, interacting with subordinates, communicating.

7. PREREQUISITES: Instruction in leadership or supervision.

8. DESCRIPTION: Personnel relations and conflict resolution are experienced in a middle management setting as a department manager attempts to make a tense employee conflict more tolerable between one employee who is highly unpopular, efficient, and irreplaceable and a co-worker who is quite inefficient. He attempts to accomplish this without recourse to the personnel man or vice-president in charge of his department, who, in turn, wish to resolve the dispute without laying groundwork for future trouble.

9. STUDENT OBJECTIVES: To improve and make more tolerable the conflict situation between two employees.

10. DECISIONS MADE BY STUDENTS: Approach to problem, action to take.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	10 - 30
PLAYING TIME:	1 to 2 hours.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructor's manual, scenarios.
SPECIAL EQUIPMENT:	None.
COST:	Unknown.
SOURCE:	Abt Associates, Inc. Boston, Mass.
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	7
COST RATING:	5
EFFICIENCY:	1.40

13. NOTES: Suitable for adaptation to a military context, organization and procedures; suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: CADISIM (COMPUTER ASSISTED DISPOSAL SIMULATION)

1. TYPE: Computer assisted, gaming simulation, media-ascendant.
2. CONTEXT: Military.
3. STATED PURPOSE: Designed to illustrate the problems involved in managing a large property disposal activity, such as those which dispose of excess aeronautical or military material through donation, scrap, sale, or transfer.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills, assessment.
6. PROCESS TRAINING POTENTIAL: Directing, managing, decision making, planning, organizing, analyzing data, acquiring information, information processing, problem analysis, interacting with peers, communicating, participating in group situations.
7. PREREQUISITES: Instruction in fundamentals of property disposal.
8. DESCRIPTION: Participants represent the program section of the property disposal offices of a large aeronautical material depot. The depot is involved in disposal through donation, scrap, sale, or transfer of excess materials. Forecast of excesses are generated by stock number by the National Inventory Control Point. Participants make two major decisions each month: (1) the number of items to process and (2) the size of the labor force. These decisions are based on the forecasts of excesses given on the overall effect of regular labor costs, overtime costs, hiring and lay off, and inventory carrying costs on the cost per item processed by the activity.

   The activity covers a 12-month period. Each group is given 10-15 minutes to make its decisions for the coming month. Data on the effect of production rate per month and size of labor force on overtime costs, hiring and layoff costs, and inventory costs are provided, along with forecasts of excesses. Monthly reports are generated showing the excesses forecast and actually received, the number of items processed, and the inventory, the size of labor force, and the resulting payroll, hiring and layoff, overtime, and inventory carrying costs. Cumulative costs to date are given.
9. STUDENT OBJECTIVES: To operate the program section of property disposal so as to minimize the cost per unit processed ratio.
10. DECISIONS MADE BY STUDENTS: Number of items to be processed; number of employees in work force.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 6-60 in 2 to 12 teams.
    - PLAYING TIME: 3-5 hours, in 10-15 minute rounds.
    - INSTRUCTOR PREPARATION: 4 hours.
    - STUDENT PREPARATION: Review of property disposal policies and procedures.
    - COMPONENTS: Players' manuals, computer program.
    - SPECIAL EQUIPMENT: Computer (FORTRAN)
    - COST: Unknown.
    - SOURCE: Commandant, U.S. Army Logistics Management Center, Fort Lee, Va.
    - AUTHOR: Lt.Cdr. Weir; U.S.Navy, & David A.Ameen; U.S.Army Logistics Management Center.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 8
    - COST RATING: 5
    - EFFICIENCY: 1.60
13. NOTES: Although originally designed for training higher-level officers, this gaming simulation should be suitable for orienting junior officers to the problems of operating a property disposal activity; suitable for assessment when assessment instruments are added.
14. REFERENCES: None.

TITLE: CAISIM (COMPUTER ASSISTED INDUSTRIAL SIMULATION)

1. **TYPE:** Computer assisted, gaming simulation, media-ascendant.

2. **CONTEXT:** Business/military.

3. **STATED PURPOSE:** To demonstrate typical problems in managing an industrial production system.

4. **POTENTIAL USE:** Training, assessment.

5. **POTENTIAL FUNCTIONS:** Application of knowledge, application of principles, skill development, assessment.

6. **PROCESS TRAINING POTENTIAL:** Decision making, planning, information processing, problem analysis, interacting with peers, participating in group situations.

7. **PREREQUISITES:** Instruction in fundamentals of military-industrial management.

8. **DESCRIPTION:** Players, in teams, are policy makers of the Production Control Branch of the Industrial Division that makes the 107mm recoilless rifle. They meet monthly production demands of the National Inventory Control Point at the least overall cost. The major costs considered are regular payroll, overtime, hiring, and layoff, and inventory costs. Participants select the units to produce and the size of the workforce that meet the demand and minimize costs.

9. **STUDENT OBJECTIVES:** To minimize total production costs by selecting the optimum monthly production schedule.

10. **DECISIONS MADE BY STUDENTS:** Number of units to produce, size of labor force.

11. **EXERCISE DATA AND REQUIREMENTS:**

NUMBER PLAYERS:	6-60, in 2-12 teams
PLAYING TIME:	2 to 4 hours in 20 minute rounds
INSTRUCTOR PREPARATION:	None.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, computer program
SPECIAL EQUIPMENT:	Computer (FORTRAN)
COST:	Property of U.S. Army, only computer operating costs involved.
SOURCE:	Commandant, U. S. Logistics Management Center, Ft. Lee, Virginia.
AUTHOR:	James Arnett, William Ketner, & Matthew J. McGrath; U.S.Army Logistics Management Center.

12. **TRAINING VALUE:**

EFFECTIVENESS RATING	8
COST RATING:	4
EFFICIENCY:	2

13. **NOTES:** Although designed for use with higher level military managers, should be useful for orienting junior officers to some of the problems of military-industrial management; suitable for assessment when assessment instruments added.

14. **REFERENCES:** None.

TITLE: CALOGSIM (COMPUTER ASSISTED LOGISTICS SIMULATION)

1. TYPE: Computer assisted, gaming simulation, media-ascendant.

2. CONTEST: Military.

3. STATED PURPOSE: To illustrate and provide experience in making decisions in a wholesale supply system.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills, assessment.

6. PROCESS TRAINING POTENTIAL: Decision making, planning, organizing, analyzing data, information processing, problem analysis, interacting with peers, communicating, participating in group situations.

7. PREREQUISITES: Instruction in fundamentals of military supply systems.

8. DESCRIPTION: The total system approach is used to integrate all of the functional areas into the wholesale supply system. The settings and decisions are similar to those found in any wholesale supply system. Each management team of six to ten participants is responsible for supplying eight depots located in the United States. The inventory is divided into three classes - major, secondary, and repair parts. The team has complete control over major aspects of the supply system which include the forecasting model, review model and ordering model. There are charges made for changes made in the system and for paperwork. The computer provides monthly reports on the complete status of the system and costs. The computer also does the scoring.

9. STUDENT OBJECTIVES: Maintain military supplies of troops in a state of readiness at lowest possible cost.

10. DECISIONS MADE BY STUDENTS: Procurement, distribution, scheduling, repair (normal, emergency, and cancel), surplus disposal, inventory policies (systems, service level, something constant, trend adjustment, reorder cycle, safety stock level, estimated demands), transfers.

11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 6 - 120, 2 to 12 teams.
    PLAYING TIME: 3 days, in 48 - 30 minute rounds.
    INSTRUCTOR PREPARATION: 1 day.
    STUDENT PREPARATION: Review of military supply systems.
    COMPONENTS: Players' manuals, game forms, computer program, reference material.
    SPECIAL EQUIPMENT: Computer (FORTRAN IV)
    COST: Unknown.
    SOURCE: Commandant, U.S. Army Logistics Management Center, Fort Lee, Va.
    AUTHOR: Staff of Computer Simulation Division, U.S.Army Logistics Management Center.

12. TRAINING VALUE:
    EFFECTIVENESS RATING: 8
    COST RATING: 8
    EFFICIENCY: 1

13. NOTES: Although designed for higher-level officers, this gaming simulation should provide a useful orientation to the military supply system for junior officers as well; suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: COMMUNICATING FOR RESULTS

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To help first and second level supervisors improve communication skills.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Managing, interacting with subordinates, communicating.
7. PREPREQUISITES: Instruction in principles of communication, leadership, and supervision.
8. DESCRIPTION: In the role of first and second line supervisors, players exercise communication skills. An interactive game with some role play. The game outcome is in the form of both individual and team scores. Chance does not influence play. The game is played in two parts.
9. STUDENT OBJECTIVES: To be best communicator.
10. DECISIONS MADE BY STUDENTS: Part I - interpreting symbols, applying ladder of abstraction, matching messages to the expected recipient, classifying statements and replying to emotional remarks. Part II - giving assignments, instructions, handling rumors, downward communication.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	3 - 5 in one team, any number of teams.
PLAYING TIME:	3 hours (1-1/2 hours per part).
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$17.50 for 5 player set; $.50 for administrator's guide.
SOURCE:	Didactic Systems, Inc., 6 N. Union Ave., Cranford, N. J. 07016
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	8
COST RATING:	4
EFFICIENCY:	2

13. NOTES: Can be adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: COMMUNICATION

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To teach principles of communication.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Communication, interaction with subordinates, peers, and superiors.

7. PREREQUISITES: Some experience with organizations helpful but not essential.

8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. Trains the player to communicate more effectively by placing him in the role of a "communications consultant". He is required to evaluate and upgrade a variety of typical, realistic communication situations on the basis of communication method selected, structure of the communication, and feedback requirement. When finished, the player has also determined his own communication achievement score. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.

9. STUDENT OBJECTIVES: To achieve best score.

10. DECISIONS MADE BY STUDENTS: Most appropriate communication technique, most appropriate content of communication, types of feedback to provide.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	1 - Unlimited.
PLAYING TIME:	1 hour.
INSTRUCTOR PREPARATION:	Familiarization with exercise procedures.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
SPECIAL EQUIPMENT:	None.
COST:	$6.95 ea.; $6.50 ea. for purchase of 100 or more.
SOURCE:	Education Research, P. O. Box 4205, Warren, N. J. 07060.
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	6
COST RATING:	1
EFFICIENCY:	6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.

14. REFERENCES: None.

TITLE: CONGLOMERATE

1. TYPE: Manual, game, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To evoke behavior that has been found to be related to managerial success.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Skill development, assessment.

6. PROCESS TRAINING POTENTIAL: Decision making, analyzing data, information processing, interacting with peers, communicating, participating in group situations.

7. PREREQUISITES: None.

8. DESCRIPTION: A competitive management game for 3 or 4 teams of 4 participants. East team sets its own objectives and plans its activities to meet these objectives. Each team starts with a given amount of stocks in a number of companies and attempts to form conglomerates by bartering companies with other teams. The game is played during two trading periods. Points are awarded according to the type of conglomerate formed. The team awarded the most points is the winner. Individual and team performance is observed and evaluated. Also participants fill out a form on how each views his performance and the performance of other team members.

9. STUDENT OBJECTIVES: To help team set its objective and plan strategy for meeting its objectives (bartering for control and ownership in companies to form a conglomerate).

10. DECISIONS MADE BY STUDENTS: Decisions relative to strategies and planning.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	12-16 in four teams.
PLAYING TIME:	2 hours.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Instruction materials, conglomerate grid, assessor report forms, ranking summary forms, Participants Report Form. Table and chairs for each team.
SPECIAL EQUIPMENT:	None.
COST:	Unknown.
SOURCE:	Development Dimensions, Inc., 767 Colony Circle, Pittsburgh, Pa. 15243
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	5
COST RATING:	5
EFFICIENCY:	1

13. NOTES: This game was used as a part of the Fort Benning Assessment Center and, accordingly, is suitable for use with army officers; suitable for assessment when assessment instruments are added. Used by Development Dimensions, Inc. for assessment purposes.

14. REFERENCES: None.

TITLE: CONSTRUCTIVE DISCIPLINE

1. TYPE: Manual, simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To give managers and supervisors an opportunity to explore and discuss constructive disciplinary procedures and how they can exert a positive influence on morale and production.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Managing, decision making, interacting with subordinates, communicating.
7. PREREQUISITES: Instruction in leadership or supervision.
8. DESCRIPTION: Players, in teams, are supervisors of a department with production and clerical functions. The play involves practice in handling situations which influence morale and discipline. Quantitative and qualitative outcomes.
9. STUDENT OBJECTIVES: To achieve best performance.
10. DECISIONS MADE BY STUDENTS: Setting of realistic goals for subordinates, keeping employees informed of their performance, constructive criticizing, recognition, preventing "loss of face", assigning new equipment equitably.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	3 - 5 in one team, any number of teams.
PLAYING TIME:	2 - 3 hours
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$17.50 for 5 players, $.50 for administrator's guide.
SOURCE:	Didactic Systems, Inc., 6 N. Union Ave. Cranford, N. J. 07016
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	7
COST RATING:	4
EFFICIENCY:	1.75

13. NOTES: Can be adapted to military - civil service context; suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: CON-TAC-TIX

1. TYPE: Manual, game, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To study the key management functions of planning, organizing, controlling and motivating. Also to study group problem solving, group interaction, communication, and leadership.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Decision making, planning, organizing, information processing, problem analysis, interacting with peers, communicating, participating in group situations.
7. PREREQUISITES: Instruction in fundamentals of management and administration.
8. DESCRIPTION: A flexible, multi-use game which can be used as an introductory device to illustrate group planning, group problem solving, group decision making, etc. Although learning outcomes are emphasized, the game results in standings of first, second, third place and so on. Chance does not influence play. It can be replayed several times to emphasize different management functions.
9. STUDENT OBJECTIVES: To help team to achieve best performance.
10. DECISIONS MADE BY STUDENTS: Decisions relative to strategies and planning.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	4 - 8 in one team, any number of teams.
PLAYING TIME:	1 to 3 hours.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, administrator's manual, observer's manual, game board, playing pieces.
SPECIAL EQUIPMENT:	None.
COST:	$25.00
SOURCE:	Didactic Systems, Inc., 6 N. Union Ave. Cranford, N. J. 07016
AUTHOR:	Staff of The Didactic Game Company.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	5
COST RATING:	4
EFFICIENCY:	1.25

13. NOTES: Suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: THE CORK BALLS GAME (PART OF SUPERVISORY SKILLS SERIES)

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To teach principles of work simplification and the preparation and use of flow charts and diagrams.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, assessment.
6. PROCESS TRAINING POTENTIAL: Decision making, planning, organizing, analyzing data, acquiring information, information processing, problem analysis, interacting with peers, communicating.
7. PREREQUISITES: Instruction in work simplification procedures and the preparation of flow charts and diagrams.
8. DESCRIPTION: Production teams must design a system for packaging two sizes of cork balls into two sizes of plastic containers. They plan for optimum efficiency by making decisions regarding work force, analysis of the overall job, sequence and procedures, and work distribution. Teams prepare flow charts and diagrams, there is limited role play.
9. STUDENT OBJECTIVES: To design the most efficient system.
10. DECISIONS MADE BY STUDENTS: Organization of work force, selection of work procedures, work distribution.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 4 - 16 in two teams.
    - PLAYING TIME: 1 to 2 hours.
    - INSTRUCTOR PREPARATION: 2 hours.
    - STUDENT PREPARATION: Review of work simplification procedures and flow charting.
    - COMPONENTS: Administrator's manual, cork balls, plastic containers, colored paper, funnels, rubber bands, rating sheets.
    - SPECIAL EQUIPMENT: None.
    - COST: $75.00, 3 games for $200.00
    - SOURCE: Training Development Center, Two Pennsylvania Plaza, New York, N.Y. 10001
    - AUTHOR: Staff of Training Development Center, The Sterling Institute.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 7
    - COST RATING: 7
    - EFFICIENCY: 1
13. NOTES: Suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: DECISION

1. **TYPE:** Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To develop skills of fact gathering, analysis, development of options, selection of best alternatives.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Decision making, planning, organizing, acquiring information, information processing, problem analysis.
7. PREREQUISITES: Some experience with organizations helpful but not essential.

8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. DECISION is built around the decision process: fact gathering, analysis, development of options, selection of the best alternative. As an operations manager, the player works through a variety of overlapping decisions involving personnel, office relocation, equipment purchase, etc. He strengthens his decision skills through practice. The game pay-off (profit) supplies feedback on the effect of his decisions. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.

9. STUDENT OBJECTIVES: To achieve best score.
10. DECISIONS MADE BY STUDENTS: Personnel actions, office relocation, equipment purchases.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	1 - Unlimited.
PLAYING TIME:	1 hour.
INSTRUCTOR PREPARATION:	Familiarization with exercise procedures.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
SPECIAL EQUIPMENT:	None.
COST:	$6.95 ea.; $4.50 ea. for purchase of 100 or more.
SOURCE:	Education Research, P. O. Box 4205, Warren, N. J. 07060.
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	6
COST RATING:	1
EFFICIENCY:	6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.
14. REFERENCES: None.

TITLE: DELEGATION

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To teach and reinforce concepts such as how to delegate, what to delegate, and when to delegate.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Managing, organizing, planning, decision making, problem analysis.
7. PREREQUISITES: Some experience with organizations helpful but not essential.
8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. The player finds himself in a simulated situation where he must make related decisions on assignment priorities, which tasks can be delegated, who is the best subordinate to handle each assignment. A point scoring system helps him (or the trainer) evaluate his effectiveness. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.
9. STUDENT OBJECTIVES: To achieve best score.
10. DECISIONS MADE BY STUDENTS: What to delegate, when to delegate, to whom to delegate.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	1 - Unlimited.
PLAYING TIME:	1 hour.
INSTRUCTOR PREPARATION:	Familiarization with exercise procedures.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
SPECIAL EQUIPMENT:	None.
COST:	$6.95 ea.; $4.50 ea. for purchase of 100 or more.
SOURCE:	Education Research, P. O. Box 4205, Warren, N. J. 07060
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING	6
COST RATING:	1
EFFICIENCY:	6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.
14. REFERENCES: None.

TITLE: GRIEVANCE HANDLING

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To develop more thorough approaches to human relations so that complaints and grievances do not flourish.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Managing, decision making, problem analysis, interacting with subordinates, communicating.
7. PREREQUISITES: Instruction in supervision and leadership.
8. DESCRIPTION: Players are office supervisors who seek to develop more thorough approaches to human relations problems in their department. The play is interactive with both conflict and cooperation. Chance does not influence the outcomes. There are both individual and team scores.
9. STUDENT OBJECTIVES: To develop thorough approaches to human relations so as to limit complaints and grievances, ie., to practice preventive employee relations.
10. DECISIONS MADE BY STUDENTS: How to dispose of various types of informal grievances, policies for the reduction of incidences and the severity of grievances.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 3-5 in one team, any number of teams.
    - PLAYING TIME: 2 - 3 hours.
    - INSTRUCTOR PREPARATION: 1 hour.
    - STUDENT PREPARATION: None.
    - COMPONENTS: Players' manuals, administrator's manual.
    - SPECIAL EQUIPMENT: None.
    - COST: $17.50 for 5 players; $.50 for administrator's guide.
    - SOURCE: Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
    - AUTHOR: Unknown.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 5
    - COST RATING: 4
    - EFFICIENCY: 1.25
13. NOTES: Can be adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: HANDLING CONFLICT IN MANAGEMENT I

1. TYPE: Manual, simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To give managers and manager trainees an opportunity to improve their conflict resolution skills by improving their perception about emotional involvement.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Problem analysis, interacting with peers, communicating, participating in group situations.
7. PREREQUISITES: None; instruction in organizational psychology, leadership, or human relations helpful.
8. DESCRIPTION: Players represent managers in a factory and deal with other managers in their peer group. They must recognize and anticipate emotional reactions, must approach the quality control manager, must decide on opening communication, de-esculating the conflict and how to establish an open-communications climate. Ideas are exchanged on how potential conflict situations can be turned into constructive channels.
9. STUDENT OBJECTIVES: To deal with conflicts and make decisions which will reduce future conflict.
10. DECISIONS MADE BY STUDENTS: How to deal with the conflict.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	3 in one team; any number of teams.
PLAYING TIME:	2 1/2 to 3 hours.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manual, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$24.00 for 5 player set; $.50 for administrator's guide.
SOURCE:	Didactic Systems, Inc., 6 N. Union Ave., Cranford, N. J. 07016 and American Management Association, Inc.
AUTHOR:	Erwin Rausch & Wallace Wohlking, The Didactic Game Company

12. TRAINING VALUE:

EFFECTIVENESS RATING:	8
COST RATING:	4
EFFICIENCY:	2

13. NOTES: Can be adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: HANDLING CONFLICTS IN MANAGEMENT II

1. TYPE: Manual, simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To provide an opportunity for managers and managerial trainees to enhance conflict resolution skills. They improve their perceptive and emotional involvement and exchange ideas on how potential conflict situations can be turned into constructive channels.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Problem analysis, interacting with peers, communicating, participating in group situations.
7. PREREQUISITES: None; instruction in organizational psychology, leadership, or human relations helpful.

8. DESCRIPTION: Participants in groups of 4 or 5, form teams and compete for best performance. Competition is between members and between teams. Participants are asked to assume that regular meetings with other managers take place to discuss mutual problems. Also that the other members of the team are those associates. Specific problems are presented. Each player commits himself to a point of view and works with the group to achieve a consensus. Feedback is partly based on solutions and explanations provided by the game and partly based on the combined judgments of the participants.

9. STUDENT OBJECTIVES: To perform best.
10. DECISIONS MADE BY STUDENTS: How to introduce a problem to a group, counter a hostile reaction, deal with dissention, respond to a consultant's questionnaire, deal with a polarized group, resolving an impasse, solve a leadership problem.
11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 4-5 per team, any number of teams.
    PLAYING TIME: 2-1/2 to 3 hours
    INSTRUCTOR PREPARATION: 1 hour
    STUDENT PREPARATION: None.
    COMPONENTS: Players' manuals, administrator's manual.
    SPECIAL EQUIPMENT: None.
    COST: $24.00 for five participant set (two or more sets $17.50 each).
    SOURCE: Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
    AUTHOR: Erwin Rausch & Wallace Wohlking, The Didactic Game Company
12. TRAINING VALUE:
    EFFECTIVENESS RATING: 8
    COST RATING: 4
    EFFICIENCY: 2
13. NOTES: Can be adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: INSTRUCTION

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To develop training skills.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Planning, managing, decision making, information processing, problem analysis, interacting with subordinates.

7. PREREQUISITES: Some experience with organizations helpful but not essential.

8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. The game objective is to train a new employee in ten days. After organizing the program, the player implements it by simulating instruction techniques, reinforcement methods, on-the-job coaching, etc. His actions keep the program on track, or delay it, thus providing game "score". Each decision is analyzed to reinforce/upgrade manager's training skills. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.

9. STUDENT OBJECTIVES: To achieve best score.

10. DECISIONS MADE BY STUDENTS: Training schedules, choice of training techniques.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	1 - Unlimited.
PLAYING TIME:	1 hour.
INSTRUCTOR PREPARATION:	Familiarization with exercise procedures.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
SPECIAL EQUIPMENT:	None.
COST:	$6.95 ea.; $4.50 ea for purchase of 100 or more.
SOURCE:	Education Research, P. O. Box 4205, Warren, N. J. 07060.
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	6
COST RATING:	1
EFFICIENCY:	6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.

14. REFERENCES: None.

TITLE: INTERACTION

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To develop interpersonal skills.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Management, interaction with subordinates, interaction with peers, interaction with superiors, communication, participating in group situations.
7. PREREQUISITES: Some experience in organizations helpful but not essential.
8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. Designed to develop interpersonal relations skills. The player is positioned in a real-life management role with the objective of "keeping things in balance" - performing his job while interacting with superiors, subordinates, peers, and others. He is rewarded (or penalized) with points for each interaction, and must deal with the consequences caused by ineffective reactions. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.
9. STUDENT OBJECTIVES: To achieve best score.
10. DECISIONS MADE BY STUDENTS: How to interact with subordinates, peers, and superiors.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 1 - Unlimited.
    - PLAYING TIME: 1 hour.
    - INSTRUCTOR PREPARATION: Familiarization with exercise procedures.
    - STUDENT PREPARATION: None.
    - COMPONENTS: Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
    - SPECIAL EQUIPMENT: None.
    - COST: $6.95 ea.; $4.50 ea. for purchase of 100 or more.
    - SOURCE: Education Research, P. O. Box 4205, Warren, N. J. 07060.
    - AUTHOR: Unknown.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 6
    - COST RATING: 1
    - EFFICIENCY: 6
13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.
14. REFERENCES: None.

TITLE: LEADERSHIP

1. **TYPE:** Manual, gaming simulation, media-ascendant.

2. **CONTEXT:** Business.

3. **STATED PURPOSE:** To train managers to be more effective leaders and assess their leadership styles.

4. **POTENTIAL USE:** Training, assessment.

5. **POTENTIAL FUNCTIONS:** Application of principles, development of skills, development of attitudes, assessment.

6. **PROCESS TRAINING POTENTIAL:** Interpersonal; directing, managing, decision making, planning, acquiring information, problem analysis, interaction with subordinates, interacting with peers, communicating (written).

7. **PREREQUISITES:** Some experience within organizations helpful but not essential.

8. **DESCRIPTION:** A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. As the leader of a project team, the player is confronted with a variety of interactive leadership situations. Scoring method supplies feedback on decisions and enables manager to determine to what degree his personal style is task or people oriented. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.

9. **STUDENT OBJECTIVES:** To achieve best score.

10. **DECISIONS MADE BY STUDENTS:** Project and team management, personnel actions.

11. **EXERCISE DATA AND REQUIREMENTS:**

NUMBER PLAYERS:	1 - Unlimited.
PLAYING TIME:	1 hour.
INSTRUCTOR PREPARATION:	Familiarization with exercise procedures.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
SPECIAL EQUIPMENT:	None.
COST:	$6.95 ea.; $4.50 ea. for purchase of 100 or more.
SOURCE:	Education Research, P. O. Box 4205, Warren, N. J. 07060.
AUTHOR:	Unknown.

12. **TRAINING VALUE:**

EFFECTIVENESS RATING:	6
COST RATING:	1
EFFICIENCY:	6

13. **NOTES:** Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.

14. **REFERENCES:** None.

TITLE: LEADING GROUPS TO BETTER DECISIONS

1. TYPE: Manual, simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To improve skills as effective conference leaders in a problem solving and decision making situation.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Problem analysis, interacting with peers, communicating, participating in group situations.

7. PREREQUISITES: Instruction in group problem solving.

8. DESCRIPTION: Players are members of a conference group simulating a management group of equal or lower level management people in a problem solving situation. The group investigates all aspects of a problem and arrives at a carefully developed solution through effective conference leadership.

9. STUDENT OBJECTIVES: To be an effective conference leader.

10. DECISIONS MADE BY STUDENTS: How to start a meeting, prevent premature solutions, getting participation, solving discussion deadlocks, coping with disruption, task assignments, and planning for meeting follow up.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	3-5 in one team, any number of teams.
PLAYING TIME:	3 to 4 hours
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$24.00 for 5 players; $.50 for administrator's manual.
SOURCE:	Didactic Systems, Inc., 6 N. Union Ave., Cranford, N. J. 07016
AUTHOR:	Erwin Rausch, The Didactic Game Company.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	5
COST RATING:	4
EFFICIENCY:	1.25

13. NOTES: Can be easily adapted to military context; suitable for assessment when assessment instruments added.

14. REFERENCES: None

TITLE: THE LUMBER YARD GAME (PART OF SUPERVISORY SKILLS SERIES)

1. **TYPE:** Manual, simulation, interpersonal-ascendant.

2. **CONTEXT:** Business.

3. **STATED PURPOSE:** To teach the principles of training and to demonstrate the role of classroom vs. on-the-job training.

4. **POTENTIAL USE:** Training, assessment.

5. **POTENTIAL FUNCTIONS:** Application of knowledge, application of principles, development of skills, assessment.

6. **PROCESS TRAINING POTENTIAL:** Directing, managing, interacting with peers, interacting with subordinates, communicating.

7. **PREREQUISITES:** Instruction in principles of training.

8. **DESCRIPTION:** Players are either supervisors giving on-the-job training to a new clerk in a lumber yard, the new clerk, or observers. Five players are selected to receive pre-class materials to prepare them for the job of supervisor. Other players are teams containing one member who will be the new clerk and a number of observers who will rate the supervisor. The play is based on a simulated day's work flow with pressures and interruptions caused by lumber orders by mail and by intercom(tape). Follow up discussion is on the new clerk's performance level, the supervisor's methods, entrance and terminal behaviors and classroom vs. on-the-job training.

9. **STUDENT OBJECTIVES:** Supervisors - to instruct well.
Clerks - to perform well.

10. **DECISIONS MADE BY STUDENTS:** Supervisors - what teaching methods to use. Clerks - how to process orders.

11. **EXERCISE DATA AND REQUIREMENTS:**

NUMBER PLAYERS:	15 - 20 in five teams
PLAYING TIME:	1 - 2 hours
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	Review of principles of training.
COMPONENTS:	Tape cassette, Players' manuals, administrator's manual, wooden paperweights labeled "mill", "office" and "shipping", three-part order forms, business letters, and evaluation sheets.
SPECIAL EQUIPMENT:	Cassette type player.
COST:	$75.00, 3 games for $200.00.
SOURCE:	Training Development Center, Two Pennsylvania Plaza, New York, N. Y. 10001
AUTHOR:	Unknown.

12. **TRAINING VALUE:**

EFFECTIVENESS RATING:	8
COST RATING:	7
EFFICIENCY:	1.1

13. **NOTES:** Suitable for use with junior officers in present form; suitable for assessment when assessment instruments added.

14. **REFERENCES:** None.

TITLE: MANAGEMENT BY OBJECTIVES

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To provide managers with an opportunity to explore various approaches leading toward a comprehensive management by objectives program.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills, assessment.

6. PROCESS TRAINING POTENTIAL: Decision making, planning, problem analysis, interacting with peers, interacting with subordinates, communicating.

7. PREREQUISITES: Orientation to management by objectives, principles and techniques.

8. DESCRIPTION: Participants form teams and compete to achieve best performance. They are asked to assume that they meet regularly with the other members of the team (managers) to discuss mutual problems in implementing a management by objectives program and to also assume the other members of the team to be these associates. Each team is presented with specific problems for disposition. Each member commits himself to a point of view and works with the other members to achieve a consensus. Feedback is based partially on solutions and explanations provided by the game and in part on the combined judgments of participants.

9. STUDENT OBJECTIVES: To achieve the best performance.

10. DECISIONS MADE BY STUDENTS: Setting production objectives, starting a "management by objectives" program, establishing a specific action program to achieve the objectives, selling the objectives to employees, assigning priorities.

11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 5 or 5 per team, any number of teams.
    PLAYING TIME: 2 - 2 1/2 hours.
    INSTRUCTOR PREPARATION: 1 hour.
    STUDENT PREPARATION: Review of management by objectives.
    COMPONENTS: Players' manuals, administrator's manual.
    SPECIAL EQUIPMENT: None.
    COST: $17.50 for 5 participant set.
    SOURCE: Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
    AUTHOR: Unknown.

12. TRAINING VALUE:
    EFFECTIVENESS RATING: 6
    COST RATING: 4
    EFFICIENCY: 1.5

13. NOTES: Suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: MANAGEMENT EXERCISES

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.
2. CONTEXT: Varied.
3. STATED PURPOSE: To provide business students and low-level managers experiences illustrative of phenomena of organizational psychology.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of knowledge, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Directing, managing, decision making, planning, information processing, problem analysis, interacting with peers, interacting with subordinates, interacting with superiors, communicating, participating in groups.
7. PREREQUISITES: Instruction in leadership.
8. DESCRIPTION: A series of nine exercises designed to give students experiences in the phenomena of organizational psychology and the psychology of men at work. Contexts, student objectives, and methodology vary according to the exercise. Topics covered included system dynamics, planning, cooperation and competition, superior-subordinate relations, leadership styles, communication, pay and compensation, decision making, negotiating, attitudes, and group dynamics.
9. STUDENT OBJECTIVES: Vary according to exercise.
10. DECISIONS MADE BY STUDENTS: Vary according to exercise.
11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 4 - 12 per exercise.
    PLAYING TIME: 2 - 4 hours per exercise, in one hour periods.
    INSTRUCTOR PREPARATION: 1 hour per exercise.
    STUDENT PREPARATION: None
    COMPONENTS: Players' manuals, Trainer's manual.
    SPECIAL EQUIPMENT: None.
    COST: $6.00 per participant for each exercise; $10.00 for Trainer's manual (entire series).
    SOURCE: Didactic Systems, Inc., 6 N. Union Ave.
    Cranford, N. J. 07016
    AUTHOR: Unknown.
12. TRAINING VALUE:
    EFFECTIVENESS RATING: 6
    COST RATING: 2
    EFFICIENCY: 3
13. NOTES: Exercise can be conducted as single units. Effectiveness could be improved with addition of training objectives, system feedback, and other methodologies of Instructional System Development. Suitable for assessment with addition of assessment instruments.
14. REFERENCES: None.

TITLE: MANAGEMENT OF THE PHYSICAL DISTRIBUTION FUNCTION

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To reinforce management skill and decision making.

4. POTENTIAL USE: Training.

5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills.

6. PROCESS TRAINING POTENTIAL: Directing, decision making, planning, organizing, analyzing data, information processing, problem analysis, interacting with peers, interacting with subordinates, communicating.

7. PREREQUISITES: Instruction in warehousing and military supply distribution.

8. DESCRIPTION: Players, in teams, assume the roles of managers of the physical distribution function for a corporation. There is limited role play within assigned organizational positions.

9. STUDENT OBJECTIVES: The effective management of distribution and warehouse functions.

10. DECISIONS MADE BY STUDENTS: Warehouse location, inventory distribution, function responsibilities, employee motivation.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	Minimum 3, in one or more teams.
PLAYING TIME:	2 to 3 1/2 hours.
INSTRUCTOR PREPARATION:	1 hour for first play.
STUDENT PREPARATION:	Review of warehousing and distribution procedures.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$17.50 for 5 players.
SOURCE:	Didactic Systems, Inc., 6 N. Union Avenue Cranford, N. J. 07016
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	6
COST RATING:	4
EFFICIENCY:	1.5

13. NOTES: Should be adapted to military context, organization, and procedures, suitable for training officers concerned with QM distribution and warehousing.

14. REFERENCES: None.

TITLE: MANAGEMENT FOR SUPERVISORS

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To help supervisors and foremen improve management skills and provide an opportunity to exchange ideas on methods.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Directing, managing, decision making, planning, developing policies and procedures, organizing, problem analysis, interacting with peers, interacting with subordinates, communicating, participating in group situations.

7. PREREQUISITES: Instruction in principles of administration and supervision.

8. DESCRIPTION: Participants in teams of four or five represent supervisors for office services in a medium sized organization. They compete with each other and with other teams to achieve best performance. Each is asked to assume that they meet regularly with the other managers to discuss mutual problems and to consider the other members of the teams to be these associates. Each participant commits himself to a point of view in regard to specific problems and works with the group to achieve a consensus. Feedback is based in part on the solutions and explanations provided by the game and in part on the combined judgments of the participants.

9. STUDENT OBJECTIVES: To achieve best performance.

10. DECISIONS MADE BY STUDENTS: Defining objectives, set priorities, preparing specific goals, assigning jobs, communication (up and down), dealing with undesirable practices, and leadership style.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	4 - 5 in one team, any number of teams.
PLAYING TIME:	2 to 3 hours.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	Review of principles of administration and supervision.
COMPONENTS:	Players' manuals, instructor's manual.
SPECIAL EQUIPMENT:	None.
COST:	$17.50 for 5 players; $.50 for instructor's manual.
SOURCE:	Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
AUTHOR:	Staff of The Didactic Game Company.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	7
COST RATING:	4
EFFICIENCY:	1.75

13. NOTES: Can be readily adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: MANAGING THE WORKER

1. TYPE: Manual, simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: A better understanding of the need to be sensitive to worker needs and how to provide an atmosphere for workers development and self-actualization.
4. POTENTIAL USE: Training.
5. POTENTIAL FUNCTIONS: Application of principles, development of attitudes.
6. PROCESS TRAINING POTENTIAL: Managing, interacting with subordinates, communicating.
7. PREREQUISITES: None.
8. DESCRIPTION: Players in the role of managers and blue collar personnel in a middle sized manufacturing firm make decisions pertaining to management approaches and motivation of personnel.
9. STUDENT OBJECTIVES: To formulate an approach to management and motivation in an industrial setting.
10. DECISIONS MADE BY STUDENTS: Amount of supervision vs. worker autonomy; whether or not to discipline a worker.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 10 - 20
    - PLAYING TIME: 3 to 6 hours, in 1/2 to 1 hour sessions
    - INSTRUCTOR PREPARATION: 2 - 3 hours
    - STUDENT PREPARATION: None.
    - COMPONENTS: Players' manuals, administrator's manual.
    - SPECIAL EQUIPMENT: None.
    - COST: $2.50
    - SOURCE: The MacMillan Company, 866 Third Avenue, New York, N. Y. 10023
    - AUTHOR: William Archey, Jay J. Zif, and Arthur Walker, Creative Studies, Inc.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 1
    - COST RATING: 1
    - EFFICIENCY: 1
13. NOTES: Can be adapted to a military-civil service context.
14. REFERENCES: None.

TITLE: MANAGING THROUGH FACE-TO-FACE COMMUNICATION

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To help middle managers to improve their communications skills through the exchange of ideas and approaches.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, assessment.

6. PROCESS TRAINING POTENTIAL: Decision making, interacting with peers, interacting with subordinates, interacting with superiors, communicating, participating in group situations.

7. PREREQUISITES: Instructions in principles of management and communication or experience as a supervisor or manager.

8. DESCRIPTION: Players assuming the roles of middle management in a hypothetical company are afforded the opportunity to exercise communication skills in a two part game. Role play is involved. Game outcome is in both individual and team scores. Chance does not influence play.

9. STUDENT OBJECTIVES: To achieve the best individual and team performance.

10. DECISIONS MADE BY STUDENTS: PART I - perception of differences in meaning, working with abstractions, tailoring messages to intended audience, separating fact from interference, dealing with emotional statements. PART II - giving assignments, handling rumors, improving downward communications.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	3 - 5 in one team, any number of teams.
PLAYING TIME:	3 hours, in 1 1/2 hour periods.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	Review of principles of administration and communication.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$17.50 for 5 players; $.50 for administrator's manual.
SOURCE:	Didactic Systems, Inc., 6 N. Union Avenue, Cranford. N. J. 07016
AUTHOR:	Staff of the Didactic Game Company.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	7
COST RATING:	4
EFFICIENCY:	1.75

13. NOTES: Easily adapted to military context organization and procedures; suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: MONOPOLOGS

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Military.
3. STATED PURPOSE: To provide insight into various inventory problems and to develop familiarity with operations of a supply system.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills, assessment.
6. PROCESS TRAINING POTENTIAL: Directing, decision making, planning, data analysis, information acquisition, information processing, organizing, interacting with peers, participating in group situations.
7. PREREQUISITES: Instruction or some knowledge of military supply systems.
8. DESCRIPTION: Players as individuals or as teams manage an Air Force supply system which includes one depot and five air bases. It is a hypothetical system in which spare parts are supplied on demand. The demands for parts is variable, so the biggest problems facing the managers is how best to meet the demands without becoming over stocked or running out of parts, which parts to repair, and which to replace by ordering new parts. At the beginning there is one base of supply. Others are added as the play progresses. The demand for parts is developed by random numbers or by spinner. Players compute their own scores and compare them with other participants or with scores of others who have played.
9. STUDENT OBJECTIVES: To operate an Air Force Supply system at lowest possible cost.
10. DECISIONS MADE BY STUDENTS: Procurement of new parts, repair of parts, and the distribution system to bases.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	1 - 30
PLAYING TIME:	3 hours.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Player's manual.
SPECIAL EQUIPMENT:	None.
COST:	$2.00.
SOURCE:	The Rand Corporation, 1700 Main Street, Santa Monica, Ca. 90406
AUTHOR:	J. R. Renshaw and A. Heuston, The Rand Corp.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	7
COST RATING:	1
EFFICIENCY:	7

13. NOTES: Can be adapted to army supply systems and context; suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: MOTIVATION

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To provide understanding of motivation and techniques for "motivating" subordinates1

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Managing, information processing, planning, interacting with subordinates, communication.

7. PREREQUISITES: Some experience with organizations helpful but not essential.

8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. The game is structured around an appraisal/counseling interview involving a typical subordinate. The player is provided with the employee's background and work history to study. He is then challenged to work through ten modules of a simulated interview - from planning stages, through various phases of the interview itself, and into the follow-up period after counseling. Correct decisions help manager escalate his point score. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.

9. STUDENT OBJECTIVES: To achieve best score.

10. DECISIONS MADE BY STUDENTS: Appropriate interviewing techniques, techniques for enhancing subordinate motivation.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	1 - Unlimited.
PLAYING TIME:	1 hour.
INSTRUCTOR PREPARATION:	Familiarization with exercise procedures.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
SPECIAL EQUIPMENT:	None.
COST:	$6.95 ea.; $4.50 ea. for purchase of 100 or more.
SOURCE:	Education Research, P. O. Box 4205 Warren, N. J. 07060.
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	6
COST RATING:	1
EFFICIENCY:	6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.

14. REFERENCES: None.

TITLE: THE NESTING BOXES GAME (PART OF SUPERVISORY SKILLS SERIES)

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To help players better understand planning, scheduling, directing and controlling work.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, assessment.

6. PROCESS TRAINING POTENTIAL: Directing, decision making, planning, organizing, problem analysis, interacting with peers, interacting with subordinates, communicating.

7. PREREQUISITES: Instruction in planning, scheduling, and supervision.

8. DESCRIPTION: Players, in teams, are factory teams producing sets of nesting boxes. The factories use scissors as cutting machines, self adhesive tape as sealing machines, and make boxes using cardboard patterns and construction paper. Scheduling takes into consideration time off for vacations, and breakdown of sealing machines. The teams must deal with these obstacles and make delivery when promised.

9. STUDENT OBJECTIVES: To overcome obstacles (scheduled and unscheduled) and to fill orders on time.

10. DECISIONS MADE BY STUDENTS: How to handle production, how to handle obstacles, when to promise delivery.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	4-16, in 1 to 4 teams.
PLAYING TIME:	1 to 2 hours, in 21 minute rounds.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructor's manual, templates for four box sizes, tape, scissors, pencils, timer, playing forms, calendar paper.
SPECIAL EQUIPMENT:	None.
COST:	$75.00; three games for $200.00.
SOURCE:	Training Development Center, Two Pennsylvania Plaza, New York, N. Y. 10001
AUTHOR:	Staff of Training Development Center, The Sterling Institute.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	7
COST RATING:	7
EFFICIENCY:	1

13. NOTES: Suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: OFFICE MANAGEMENT

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To help improve management skills and provide an opportunity for supervisors to exchange ideas and approaches to management.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Directing, managing, decision making, planning, developing policies and procedures, information processing, problem analysis, interacting with peers, interacting with subordinates, communicating.

7. PREREQUISITES: Instruction in management, administration, and leadership or supervision.

8. DESCRIPTION: Players, in teams, represent supervisors responsible for office services in a middle sized organization. Chance does not influence the play or outcome. The outcomes are in the form of both individual and team scores.

9. STUDENT OBJECTIVES: To achieve best performance based on "correctness" of actions and decisions.

10. DECISIONS MADE BY STUDENTS: Defining objectives, setting priorities, goal setting, delegating, communicating (up and down), job assignment, style of leadership, and dealing with undesirable practices.

11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 3 minimum per team, no maximum.
    PLAYING TIME: 3 hours.
    INSTRUCTOR PREPARATION: 1 hour.
    STUDENT PREPARATION: Review of management, administration, and leadership techniques.
    COMPONENTS: Players' manuals, administrator's manual.
    SPECIAL EQUIPMENT: None.
    COST: $17.50 for 5 player set, plus $.50 for leader's guide.
    SOURCE: Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016.
    AUTHOR: Unknown.

12. TRAINING VALUE:
    EFFECTIVENESS RATING: 6
    COST RATING: 4
    EFFICIENCY: 1.5

13. NOTES: Can be adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: OPTIMUM DELEGATION

1. **TYPE:** Manual, gaming simulation, interpersonal-ascendant.

2. **CONTEXT:** Business.

3. **STATED PURPOSE:** To provide managers and upper level supervisors an opportunity to exchange ideas on various delegation styles and the limits of optimum delegation.

4. **POTENTIAL USE:** Training, assessment.

5. **POTENTIAL FUNCTIONS:** Application of principles, development of skills, development of attitudes, assessment.

6. **PROCESS TRAINING POTENTIAL:** Directing, managing, problem solving, decision making, interacting with peers, interacting with subordinates, communicating.

7. **PREREQUISITES:** Basic instructions in principles of delegation.

8. **DESCRIPTION:** Players, in teams, role play managers and upper level supervisors. They have the opportunity to change ideas in delegation styles and limits of delegation. The game outcome is in the form of both team and individual scores and chance does not play a part in the outcome.

9. **STUDENT OBJECTIVES:** Best performance in terms of quality of decisions and actions.

10. **DECISIONS MADE BY STUDENTS:** The limits of optimum delegation, what to delegate and to whom, defining the project.

11. **EXERCISE DATA AND REQUIREMENTS:**

NUMBER PLAYERS:	3 - 5 in one team, any number of teams.
PLAYING TIME:	4 hours
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	Review of principles of delegation.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$17.50 for 5 players; $.50 for administrator's manual.
SOURCE:	Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
AUTHOR:	Unknown.

12. **TRAINING VALUE:**

EFFECTIVENESS RATING:	5
COST RATING:	4
EFFICIENCY:	1.25

13. **NOTES:** Can be adapted to military context, organization and procedures; suitable for assessment when assessment instruments added.

14. **REFERENCES:** None.

TITLE: THE PERFORMANCE GAME
(PART OF SUPERVISORY SKILLS SERIES)

1. TYPE: Manual, game, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To permit players to experience evaluating, measuring, and rewarding good performance.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Directing, managing, decision making, planning, organizing, problem analysis, interaction with peers, interacting with subordinates, communicating.
7. PREREQUISITES: Instruction in leadership and supervision.
8. DESCRIPTION: Players are workers and supervisors on a three man team which functions as a printing department of a corporation. They handle a card request from the sales manager. The request is for hand stamped cards for the twenty-four salesmen attending an annual sales meeting. They make decisions concerning quality and quantity of cards and the criteria for evaluating and measuring performance.
9. STUDENT OBJECTIVES: To achieve set quality and quantity standards.
10. DECISIONS MADE BY STUDENTS: What standards to set, performance criteria, how to appraise performance.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 6 - 15, in 3 player teams
    - PLAYING TIME: 2 hours.
    - INSTRUCTOR PREPARATION: 1 hour.
    - STUDENT PREPARATION: None.
    - COMPONENTS: Instructor's manual, playing materials, ink pad, rubber type.
    - SPECIAL EQUIPMENT: None.
    - COST: $75.00, 3 for $200.00
    - SOURCE: Training Development Center, 2 Pennsylvania Plaza, New York, N. Y. 10001 and Didactic Systems, Inc., 6 N. Union Ave., Cranford, N. J. 07016
    - AUTHOR: Staff of Training Development Center, The Sterling Institute.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 8
    - COST RATING: 7
    - EFFICIENCY: 1.1
13. NOTES: Suitable for assessment when assessment instruments added.
14. REFERENCES: None.

TITLE: THE PERSONNEL DEPARTMENT

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: For better understanding of the major function and issues of personnel management. Experience in conflict resolution and group decision making; and in the application of personnel theory to the real world.
4. POTENTIAL USE: Training.
5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills.
6. PROCESS TRAINING POTENTIAL: Managing, decision making, planning, acquiring information, information processing, problem analysis, interacting with peers, communicating.
7. PREREQUISITES: Instruction in basic principles of personnel management.
8. DESCRIPTION: Players assume the roles of departmental supervisors and personnel managers in a medium sized manufacturing agency. They make decisions on personnel problems and work to justify and gain approval of the budget. Role positions are assigned. There are both quantitative and qualitative outcomes.
9. STUDENT OBJECTIVES: Player in personnel roles - to get approval of budget. Other players - make sure budget is justified and meets requirements.
10. DECISIONS MADE BY STUDENTS: How to handle personnel problems, how to prepare and present budgets.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	20-40
PLAYING TIME:	2 1/2 to 6 hours.
INSTRUCTOR PREPARATION:	2 to 3 hours.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, administrator's manual, role profile.
SPECIAL EQUIPMENT:	None.
COST:	$2.50 per player manual, no charge for administrator's guide.
SOURCE:	The MacMillan Company, 866 Third Avenue, New York, N. Y. 10022
AUTHOR:	Jay J. Zif, Arthur H. Walker and Eliezer Orbach, Creative Studies, Inc.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	7
COST RATING:	1
EFFICIENCY:	7

13. NOTES: Should be adapted to military context, organization, and procedures.
14. REFERENCES: Zif, Jay Jiehiel; Walker, Arthur H.; and Orbach, Eliezer. The Personnel Department: Player's Manual. Riverside, New Jersey; The MacMillan Company, 1970.

TITLE: PHYSICAL DISTRIBUTION MANAGEMENT

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To assist managers of physical distribution functions to explore various aspects of their responsibilities.

4. POTENTIAL USE: Training.

5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills.

6. PROCESS TRAINING POTENTIAL: Planning, problem analysis, information processing, decision making, interacting with peers.

7. PREREQUISITES: Exposure to courses in physical distribution of supplies and inventory control.

8. DESCRIPTION: Players are executives in charge of physical distribution for a manufacturing company. They make decisions regarding the limits of the physical distribution organization, location of warehouses, criteria for selecting distribution patterns, handling certain personnel problems, and policies controlling inventory. Scores are based on "correctness" of decisions. The outcome of the game is in the form of both individual and team scores. Chance does not influence the outcome.

9. STUDENT OBJECTIVES: To achieve highest score.

10. DECISIONS MADE BY STUDENTS: The limits of the physical distribution organization, criteria for selecting distribution patterns, warehouse locations, disposition of personnel problems, and inventory control policies.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	3-5 per team, any number of teams.
PLAYING TIME:	3 hours.
INSTRUCTOR PREPARATION:	1/2 to 1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$17.50 for 5 players, $.50 for leader's guide.
SOURCE:	Didactic Systems, Inc., 6 N. Union Ave., Cranford, N. J. 07016
AUTHOR:	Staff of The Didactic Game Company.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	5
COST RATING:	4
EFFICIENCY:	1.25

13. NOTES: Requires adaptation to military context, organization, and procedures; with adaptation, suitable for training QM officers concerned with supply distribution and inventory control.

14. REFERENCES: None.

TITLE: PLANNED MAINTENANCE

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To provide an opportunity for maintenance managers to exchange ideas and new approaches to maintenance techniques that could be helpful in their own operations.
4. POTENTIAL USE: Training.
5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills.
6. PROCESS TRAINING POTENTIAL: Planning, problem analysis, information processing, decision making, interaction with peers.
7. PREREQUISITES: Exposure to classes on preventive maintenance procedures and principles.
8. DESCRIPTION: Players, in the roles of maintenance managers in a manufacturing operation, make decisions in reference to planned maintenance, inspections, problems in scheduling, control procedures, time standards, establishing maintenance priorities, and standards of performance. There is team competition and quantitative results. Scores are based on "correctness" of decisions.
9. STUDENT OBJECTIVES: To achieve highest score.
10. DECISIONS MADE BY STUDENTS: Small equipment maintenance, criteria for planned maintenance inspections, scheduling, use of control procedures, time standards, establishing maintenance priorities, standards of performance.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 3-5 in one team, any number of teams.
    - PLAYING TIME: 2 to 3 hours.
    - INSTRUCTOR PREPARATION: 1/2 to 1 hour.
    - STUDENT PREPARATION: Review of principles and procedures.
    - COMPONENTS: Players' manuals, administrator's manual.
    - SPECIAL EQUIPMENT: None.
    - COST: $17.50 for 5 players, plus $.50 for instructor's manual.
    - SOURCE: Didactic Systems, Inc., 6 N. Union Ave., Cranford, N. J. 07016
    - AUTHOR: Staff of The Didactic Game Company.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 5
    - COST RATING: 4
    - EFFICIENCY: 1.25
13. NOTES: Requires adaptation to military context, organization, and procedures; with adaptation, suitable for training officers in preventive maintenance of equipment.
14. REFERENCES: None.

TITLE: PLANNING

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To develop planning skills.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Planning, organizing.
7. PREREQUISITES: Some experience within organizations helpful but not essential.
8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. Develops planning skills by having the player organize all the elements of a real-life project. He programs dependent activities, allocates manpower, determines expected time, etc. A point scoring method is used to reward player for accuracy in planning and scheduling of resources; pay-off is also based on earliest completion date for project. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.
9. STUDENT OBJECTIVES: To achieve best score.
10. DECISIONS MADE BY STUDENTS: Scheduling, manpower allocations, resource allocations.
11. EXERCISE DATA AND REQUIREMENTS:

    NUMBER PLAYERS: I - Unlimited.
    PLAYING TIME: 1 hour.
    INSTRUCTOR PREPARATION: Familiarization with exercise procedures.
    STUDENT PREPARATION: None.
    COMPONENTS: Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
    SPECIAL EQUIPMENT: None.
    COST: $6.95 ea.; $4.50 ea. for purchase of 100 or more.
    SOURCE: Education Research, P. O. Box 4205,
    Warren, N. J. 07060
    AUTHOR: Unknown.

12. TRAINING VALUE:

    EFFECTIVENESS RATING: 6
    COST RATING: 1
    EFFICIENCY: 6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.
14. REFERENCES: None.

TITLE: PRIORITY

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To train players to properly allocate time according to priorities.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Information processing, planning, organizing.

7. PREREQUISITES: Some experience with organizations helpful but not essential.

8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. Trains the player to allocate his time according to priority by positioning him in a work situation and challenging him to plan and schedule a variety of assignments during a typical week. The game pay-off is in dollars, determined by his effectiveness in setting and adjusting priorities, as well as his skill in employing timesaving shortcuts. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.

9. STUDENT OBJECTIVES: To achieve best score.

10. DECISIONS MADE BY STUDENTS: Scheduling of work, employment of time-saving procedures.

11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 1 - Unlimited.
    PLAYING TIME: 1 hour.
    INSTRUCTOR PREPARATION: Familiarization with exercise procedures.
    STUDENT PREPARATION: None.
    COMPONENTS: Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
    SPECIAL EQUIPMENT: None.
    COST: $6.95 ea.; $4.50 ea. for purchase of 100 or more.
    SOURCE: Education Research, P. O. Box 4205,
    Warren, N. J. 07060.
    AUTHOR: Unknown.

12. TRAINING VALUE:
    EFFECTIVENESS RATING: 6
    COST RATING: 1
    EFFICIENCY: 6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.

14. REFERENCES: None.

TITLE: PRODUCTION CONTROL INVENTORY

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To provide practice and an exchange of information on approaches to good inventory control.
4. POTENTIAL USE: Training.
5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills.
6. PROCESS TRAINING POTENTIAL: Decision making, planning, development of policies and procedures, analyzing data, acquiring information, information processing, problem analysis, interacting with peers.
7. PREREQUISITES: Exposure to instruction on inventory control.
8. DESCRIPTION: Newly assigned inventory control managers make decisions regarding the classifications of materials, the control over various groups of parts, economic order quantity, determination of reorder point, and performance standards.
9. STUDENT OBJECTIVES: To achieve highest score based on attempts to modernize and improve operations.
10. DECISIONS MADE BY STUDENTS: The classification of materials, control over various groups of parts, economic order quantity, determination of reorder point, performance standards.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 3 - 5 in one team, any number of teams.
    - PLAYING TIME: 2 to 2-1/2 hours.
    - INSTRUCTOR PREPARATION: 1/2 to 1 hour.
    - STUDENT PREPARATION: Review of inventory control principles and procedures.
    - COMPONENTS: Instructor's manual, players' manuals.
    - SPECIAL EQUIPMENT: None.
    - COST: 1) $10.60 for 5 manuals
      2) $17.50 for 5 participant set, $.50 for leader's guide.
    - SOURCE: 1) Science Research Associates, Inc.,
      259 E. Erie St., Chicago, Il. 60611
      2) Didactic Systems, Inc., 6 N. Union Ave.,
      Cranford, N. J. 07016
    - AUTHOR: Erwin Rausch, The Didactic Game Company.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 8
    - COST RATING: 4
    - EFFICIENCY: 2
13. NOTES: Could be used without adaptation; however, more effective with adaptation to military context, organization, and procedures; suitable for training officers concerned with inventory control.
14. REFERENCES: None.

TITLE: PROFAIR

1. TYPE: Manual, simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To increase awareness that women have career orientations, supervisory potential, are dependable, and emotionally stable.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Management, decision making, interacting with peers, communicating, participating in group situations.

7. PREREQUISITES: None.

8. DESCRIPTION: Players represent specified members of management and themselves in a simulation of individual and team activities within a corporation. Players begin with the same resources. They work toward scores on four attitude factors based on working with women, changes in these scores, and the exploration of biases in decisions to promote women. Chance plays a part only in the role that players take.

9. STUDENT OBJECTIVES: To reach required decisions.

10. DECISIONS MADE BY STUDENTS: Whether or not to promote a woman into a management position.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	5 minimum per team, in 1 - 25 teams.
PLAYING TIME:	2 1/2 to 3 hours.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Player's manual, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$10.00
SOURCE:	Transnational Programs Corporation, 54 Main Street, Scottsville, N. Y. 14546
AUTHOR:	Bernard M. Bass, University of Rochester.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	8
COST RATING:	2
EFFICIENCY:	4

13. NOTES: Can be adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.

14. REFERENCES: Results of field tests and outside evaluation are available from the Management Research Center, University of Rochester, Rochester, New York.

TITLE: PROSPER

1. TYPE: Manual, simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To increase awareness of need for racial fairness.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Managing, interacting with peers, interacting with subordinates, communicating, participating in group situations.

7. PREREQUISITES: None.

8. DESCRIPTION: Players represent themselves, and play members of management, who deal with a conflict between a black subordinate and his white superior. The personality characteristics of roles are specified. Claimed outcomes are of changed attitudes concerning black workers, the revelation of biases in decision making concerning problem situations, and increased awareness of how to effectively utilize blacks in a work context.

9. STUDENT OBJECTIVES: To reach a required decision.

10. DECISIONS MADE BY STUDENTS: How to deal with racial conflict.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	6
PLAYING TIME:	2-1/2 to 3-1/2 hours.
INSTRUCTOR PREPARATION:	1 hour
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$10.00
SOURCE:	Transnational Programs Corporation, 54 Main Street, Scottsville, N. Y. 14546
AUTHOR:	Bernard M. Bass, Wayne F. Cascio & J. Westbrook McPherson, University of Rochester and Xerox Corp.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	8
COST RATING:	2
EFFICIENCY:	4

13. NOTES: Can be adapted to military context, organization, and procedures; suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: SELECTING EFFECTIVE PEOPLE

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To provide an opportunity for managers and executive personnel who are occasionally involved in the selection of applicants to exchange ideas on personnel selection and interviewing techniques.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, attitude development, assessment.
6. PROCESS TRAINING POTENTIAL: Managing, decision making, acquiring information, information processing, interacting with peers, communicating.
7. PREREQUISITES: Instruction in principles and techniques of personnel selection.
8. DESCRIPTION: Players represent department managers in a medium-sized company. They make personnel selections for their departments, taking into account interview planning and techniques, biographical data, and recruitment sources.
9. STUDENT OBJECTIVES: To achieve highest score based on "correctness" of decisions and adequacy of plans.
10. DECISIONS MADE BY STUDENTS: Job requirements, personnel qualifications, planning interviews, prospecting for applicants, framing questions, checking of references, how and when to terminate the search.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	3 in one team, any number of teams.
PLAYING TIME:	2 to 3-1/2 hours.
INSTRUCTOR PREPARATION:	1/2 to 1 hour.
STUDENT PREPARATION:	Review of principles and techniques of personnel selection.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None.
COST:	$17.50 for 5 players, $.50 for leader's guide.
SOURCE:	Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
AUTHOR:	Staff of The Didactic Game Company.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	6
COST RATING:	4
EFFICIENCY:	1.5

13. NOTES: Suitable in present form for providing experience in screening potential personnel for units and general understanding of problems in selecting personnel; if training in military-civil service selection techniques is desired, game will require adaptation to military context, organization, and procedures; suitable for assessment when assessment instruments are added.
14. REFERENCES: None.

TITLE: SELECTION

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To develop interviewing skills.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Interpersonal; planning, decision making, interaction with subordinates (potential).

7. PREREQUISITES: Some experience with organizations helpful but not essential.

8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. Focuses on probing and interviewing skills by involving the player in a selection situation. He reviews job specs., plans and "conducts" four simulated job interviews, and selects one applicant. Game score is based on use of questions to uncover attitudes and qualifications, ability to interpret information, and the selection decision itself. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.

9. STUDENT OBJECTIVES: To achieve best score.

10. DECISIONS MADE BY STUDENTS: Most appropriate interviewing techniques, most suitable applicant.

11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 1 - Unlimited.
    PLAYING TIME: 1 hour.
    INSTRUCTOR PREPARATION: Familiarization with exercise procedures.
    STUDENT PREPARATION: None.
    COMPONENTS: Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
    SPECIAL EQUIPMENT: None.
    COST: $6.95 ea.; $4.50 ea. for purchase of 100 or more.
    SOURCE: Education Research, P. O. Box 4205,
    Warren, N. J. 07060.
    AUTHOR: Unknown.

12. TRAINING VALUE:
    EFFECTIVENESS RATING: 6
    COST RATING: 1
    EFFICIENCY: 6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.

14. REFERENCES: None.

TITLE: SENSITIVITY

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To train managers and supervisors to "read" people and become more sensitive to the needs and drives of personnel.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Interpersonal; directing, managing, decision making, planning, acquiring information, problem analysis, interaction with subordinates, interacting with peers, communicating (written).

7. PREREQUISITES: Some experience within organizations helpful but not essential.

8. DESCRIPTION: A business game for play by either individuals as managers or by teams. It employs "Programmed Simulation" to teach principles and provide experience in application. The structure is ten interacting modules that, together, simulate a real life situation. In each, players are challenged to analyze a subordinate, a peer, a special encounter; identify drives or attitudes; predict behavior in a specific situation; develop a strategy to capitalize on the anticipated reaction. The first five modules deal with such deep-seated needs as security, achievement, recognition; the last five deal with changing subordinates' or peers' attitudes such as hostility, indifference, supportive, etc.

Players receive immediate feedback and critique at the end of each module and a point scoring system provides for a final score for each player or team. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.

9. STUDENT OBJECTIVES: To achieve best score.

10. DECISIONS MADE BY STUDENTS: Personnel actions, supervision, actions with peers.

11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 1 - Unlimited.
    PLAYING TIME: 1 hour.
    INSTRUCTOR PREPARATION: Familiarization with exercise procedures.
    STUDENT PREPARATION: None.
    COMPONENTS: Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
    SPECIAL EQUIPMENT: None.
    COST: $6.95 ea.; $4.50 ea. for purchase of 100 or more.
    SOURCE: Education Research, P. O. Box 4205,
    Warren, N. J. 07060.
    AUTHOR: Unknown.

12. TRAINING VALUE:
    EFFECTIVENESS RATING: 6
    COST RATING: 1
    EFFICIENCY: 6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.

14. REFERENCES: None.

TITLE: THE STICKS 'N STONES GAMES
(PART OF SUPERVISORY SKILLS SERIES)

1. TYPE: Manual, gaming simulation, media-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To explore the need for supervision for groups, the role of the leader, and the qualities and skills required by an effective leader.

4. POTENTIAL USE: Training, assessment.

5. POTENTIAL FUNCTIONS: Development of skills, development of attitudes, assessment.

6. PROCESS TRAINING POTENTIAL: Management, planning, problem analysis, decision making, interaction with peers, communication.

7. PREREQUISITES: None.

8. DESCRIPTION: Teams compete in the planning and construction of the best stick platform which supports a stone. A discussion session is conducted prior to the play where players compare their concepts and attitudes toward effective supervision and leadership.

9. STUDENT OBJECTIVES: To build the best platform the fastest.

10. DECISIONS MADE BY STUDENTS: Planning, supervising, and building the platform.

11. EXERCISE DATA AND REQUIREMENTS:
    NUMBER PLAYERS: 3-16 in 1-4 teams.
    PLAYING TIME: 1 to 2 hours.
    INSTRUCTOR PREPARATION: 1 hour.
    STUDENT PREPARATION: None.
    COMPONENTS: Instructor's manual, building materials.
    SPECIAL EQUIPMENT: Using Games and Simulations in the Classroom, a programmed instruction kit for the teacher is also available.
    COST: $75.00; $200 for 3 games.
    SOURCE: Training Development Center, Two Pennsylvania Plaza, New York, N. Y. 10001 and Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
    AUTHOR: Staff of Training Development Center, The Sterling Institute.

12. TRAINING VALUE:
    EFFECTIVENESS RATING: 5
    COST RATING: 7
    EFFICIENCY: .7

13. NOTES: Suitable for assessment when assessment instruments added.

14. REFERENCES: None.

TITLE: SUPERVISION

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: To reinforce existing supervisory skills and upgrade weak ones.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of principles, development of skills, development of attitudes, assessment.
6. PROCESS TRAINING POTENTIAL: Managing, directing, decision making (personnel), problem analysis, information processing, communication.
7. PREREQUISITES: Some experience with organizations helpful but not essential.
8. DESCRIPTION: A business game for play by either individuals or teams. It employs "Programmed Simulation" to teach principles and provide experience in application. Designed around a maze of typical, interacting supervisory problems. The objective of the game is to finish with the least number of "moves". Each correct move brings the player-manager closer to completion; wrong moves delay the process and require additional learning steps. Programmed instructional methods are used for presenting problems and providing feedback of results. This method permits either training individuals alone in a noncompetitive, self-paced mode or for training individuals or teams simultaneously under competitive conditions.
9. STUDENT OBJECTIVES: To finish with least number of moves.
10. DECISIONS MADE BY STUDENTS: Variety of decisions involving supervision of subordinates.
11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	1 - Unlimited.
PLAYING TIME:	1 hour.
INSTRUCTOR PREPARATION:	Familiarization with exercise procedures.
STUDENT PREPARATION:	None.
COMPONENTS:	Instructions, playing materials, scoring guide, suggestions for follow-up meeting.
SPECIAL EQUIPMENT:	None.
COST:	$6.95 ea.; $4.50 ea. for purchase of 100 or more.
SOURCE:	Education Research, P. O. Box 4205, Warren, N. J. 07060.
AUTHOR:	Unknown.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	6
COST RATING:	1
EFFICIENCY:	6

13. NOTES: Suitable for use in present form; more effective if adapted to military-civil service context. Suitable for systematic assessment if appropriate instruments added. Interaction only within teams, if used; no interaction between competitors.
14. REFERENCES: None.

TITLE: SUPERVISORY SKILLS

1. TYPE: Manual, gaming simulation, interpersonal-ascendant.

2. CONTEXT: Business.

3. STATED PURPOSE: To sharpen managerial skills of supervisors and supervisory personnel.

4. POTENTIAL USE; Training, assessment.

5. POTENTIAL FUNCTIONS: Application of principles, development of skills, assessment.

6. PROCESS TRAINING POTENTIAL: Directing, decision making, planning, organizing, information processing, problem analysis, interacting with peers, interacting with subordinates, communicating.

7. PREREQUISITES: Instruction in principles of supervision, planning, and decision making.

8. DESCRIPTION: Participants play roles of supervisors in an assembly department. The department has its own stockroom, materials handling and clerical staff. Participants compete as individuals within a team, as well as by team. Questions requiring decisions are referred to the team one at a time. They may be responded to individually or as a team with immediate feedback. Team decisions are evaluated against the other teams.

9. STUDENT OBJECTIVES: To achieve highest score.

10. DECISIONS MADE BY STUDENTS: The selection of priorities, goals to set for specific improvements, the order in which the improvements whould be made, and preparation of reports.

11. EXERCISE DATA AND REQUIREMENTS:

NUMBER PLAYERS:	3 - 5 in one team, any number of teams.
PLAYING TIME:	2 hours.
INSTRUCTOR PREPARATION:	1 hour.
STUDENT PREPARATION:	None.
COMPONENTS:	Players' manuals, administrator's manual.
SPECIAL EQUIPMENT:	None
COST:	$14.50 for 5 player set, $.50 for Leader's guide.
SOURCE:	Didactic Systems, Inc., 6 N. Union Avenue, Cranford, N. J. 07016
AUTHOR:	Erwin Rausch, The Didactic Game Company.

12. TRAINING VALUE:

EFFECTIVENESS RATING:	5
COST RATING:	5
EFFICIENCY:	1

13. NOTES: Suitable for assessment when,assessment instruments added.

14. REFERENCES: None.

TITLE: SUPPLY AND DEMAND GAME

1. TYPE: Manual, gaming simulation, media-ascendant.
2. CONTEXT: Business.
3. STATED PURPOSE: Practice in the techniques of planning, scheduling, and controlling.
4. POTENTIAL USE: Training, assessment.
5. POTENTIAL FUNCTIONS: Application of knowledge, application of principles, development of skills, assessment.
6. PROCESS TRAINING POTENTIAL: Decision making, planning, organizing, problem analysis, interacting with peers, communicating.
7. PREREQUISITES: Instruction in planning and scheduling.
8. DESCRIPTION: Players in teams of four establish factories and produce sets of nesting boxes. The team is responsible for the planning, scheduling, controlling the manufacture and the storage of materials and products. A product is "manufactured". Scissors are used as cutting machinery, self adhesive tape is used as a sealing machine, cardboard patterns are used as methods and construction paper as inventory. Two sets of instructions come with the game which permit emphasis on either the "people" or the "tasks".
9. STUDENT OBJECTIVES: To work as a member of a 4 man team to establish factories and to produce sets of nesting boxes.
10. DECISIONS MADE BY STUDENTS: Planning operations, scheduling, how to manufacture the boxes, how many to produce.
11. EXERCISE DATA AND REQUIREMENTS:
    - NUMBER PLAYERS: 4 in one team, any number of teams.
    - PLAYING TIME: 2 - 3 hours, in 21 minute rounds.
    - INSTRUCTOR PREPARATION: 2 hours.
    - STUDENT PREPARATION: None.
    - COMPONENTS: Instructor's manual, game calendars and timer, scissors and tape, patterns for boxes, paper.
    - SPECIAL EQUIPMENT: None.
    - COST: $50.00 for 16 players, first copy; $35.00 additional copies.
    - SOURCE: Training Development Center, Two Pennsylvania Plaza, New York, N. Y. 10001
    - AUTHOR: Staff of Training Development Center, Sterling Institute.
12. TRAINING VALUE:
    - EFFECTIVENESS RATING: 6
    - COST RATING: 4
    - EFFICIENCY: 1.5
13. NOTES: Suitable for assessment when assessment instruments added.
14. REFERENCES: None.